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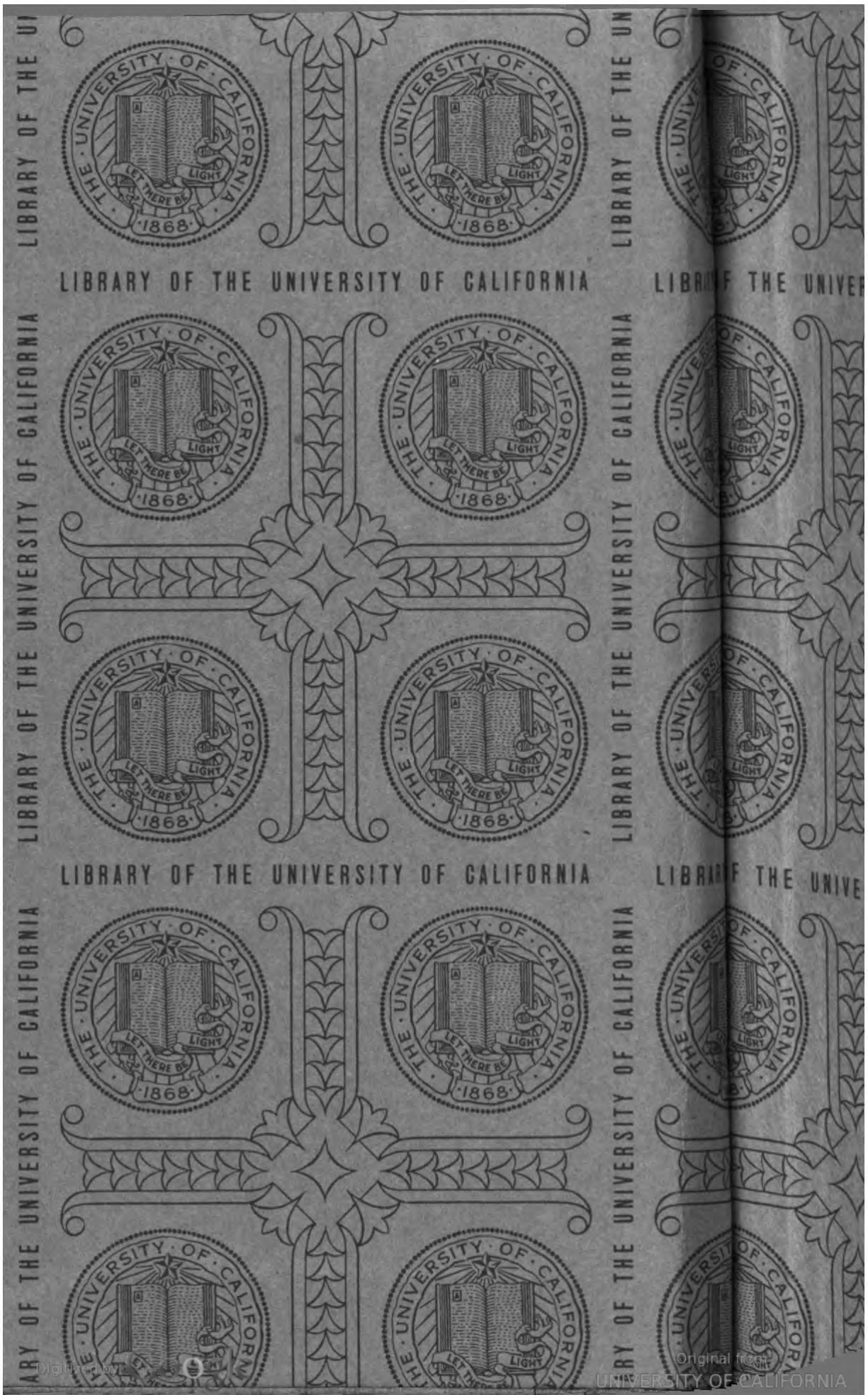
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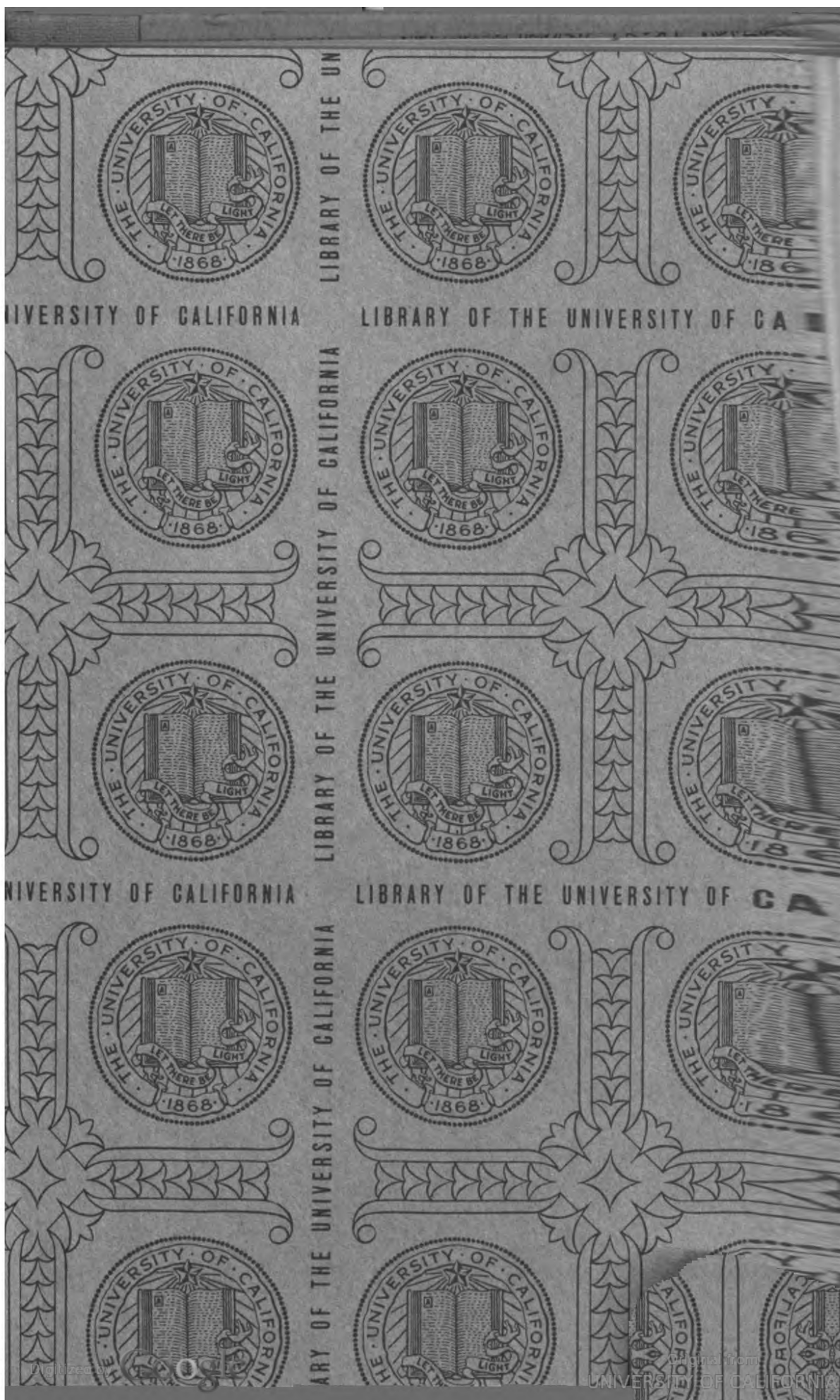
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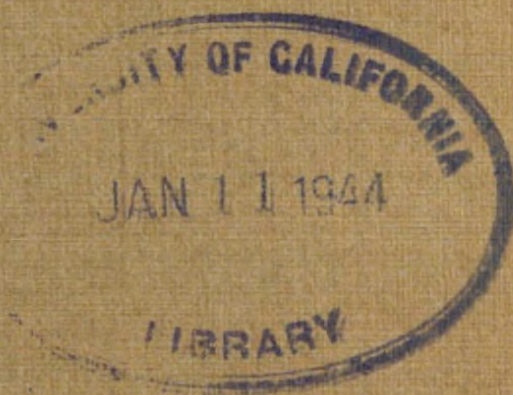
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NUMISMATIC NOTES
AND MONOGRAPHS

No. 93



FOREIGN IMITATIONS
OF THE ENGLISH NOBLE

no. 93-96

BY
HERBERT E. IVES

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FOREIGN IMITATIONS OF THE ENGLISH NOBLE

BY HERBERT E. IVES

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THE ENGLISH NOBLE AND ROSE NOBLE OR RYAL

THE noble, the chief gold coin of England for more than a hundred years and one of its monetary units for nearly three centuries, was not only original and unique in its type, but was so highly esteemed as to be widely circulated abroad, and to be the subject of numerous copies in other countries. In size and weight it follows the great gold coinage initiated in France in the thirteenth century, but the common types of that coinage—the *chaise*, the *franc-à-pied*, the *franc-à-cheval*, the *mouton*—were not copied. Instead, Edward III, when he started the modern gold coinage of England in 1351 (an earlier coinage of “florins” in 1344, of the type of the French *chaise*, was almost immediately discontinued), put out a new type, showing as its chief feature the figure of the king, with sword and shield, standing in a ship. It has been suggested that this type was chosen to commemorate the naval victory of Sluys. The name “noble” is supposed to derive from the high purity of the gold used.

It is not the intention here to give a detailed account of the English noble, which has been treated exhaus-

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tively by English numismatists.¹ As an introduction to the copies made in other countries it is sufficient to note the chief types, with the significant variations which occurred until the last coinage under James I in 1619. Nobles of identical design, differing only in the king's name, were struck by Edward III, Richard II, Henry IV, V and VI, and Edward IV, in the years between 1351 and 1461. The figure of the king in a ship was the constant obverse type; the reverse bore a gothic cross with lions and crowns in the quarters, with, as inscription, an abbreviation of the text "JESUS TRANSIENS PER MEDIUM ILLORUM IBAT" from St. Luke, IV, 30. In the center was the king's initial, E, R, or H. The first obverse inscription of Edward III was "EDWARD DEI GRA REX ANGL Z FRAN DNS HYB." From 1361 to 1369 the title of King of France was dropped, following the treaty of Bretigny, and the inscription was "EDWARD DEI GRA REX ANGL DNS HYB Z AQT," the last letters standing for Aquitaine (No. 1). After 1369 the title of King of France was renewed, together with the lordship of both Ireland and Aquitaine. These nobles were struck at various mints, including, it is surmised, Ypres in Flanders; the only ones indicating their mintage by a difference in design were those of Calais, on which the ship often bore a flag or pennant, and sometimes the letter "C" in place of the king's initial on the reverse (No. 2).

The coinage of Richard II differs only in the king's name; the issues of the three Henrys (No. 3) can be

distinguished from each other only by variations of lettering and minters' marks, except for a change of weight early in the reign of Henry IV, whose rare early nobles are distinguished as "heavy." His "light" nobles and those of the later kings are also characterized by the use of three lys in the French arms, in place of a larger number in the earlier nobles.

Edward IV coined nobles of the type just described for a brief period only (but two specimens are known, with the reverse die altered from Henry VI). He then introduced an altered design, the ryal, or rose noble (No. 4). This continued the king in the ship, but now on the side of the ship is a full-blown rose, and the flag, heretofore peculiar to Calais, becomes a rectangular standard with the king's initial. The reverse is much altered. At the center, instead of the king's initial is a rose superposed on a sun, Edward's emblem adopted after the battle of Mortimer's Cross. The inscriptions remain as before. These rose nobles were struck in large numbers during Edward's first reign (1461-70) and the several mints other than London carry their distinctive initial letter as mint mark in the water beneath the rose, E for York, B for Bristol, C for Coventry, N for Norwich.

Henry VI, during his brief restoration (1470-71), coined no nobles or rose nobles, although he did coin Edward's other new gold coin, the angel. In Edward IV's second reign no rose nobles were coined, nor were they coined by Edward V or Richard III. Henry VII struck ryals (No. 5), of a design different from either

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the nobles or the rose nobles. On these pieces he placed the figure of the king in a ship, with one standard bearing his initial "h"; another a dragon; the ship carries no rose on its side. The reverse type is a large rose filling the whole field, and in the center a shield with, curiously enough, the three fleurs-de-lys of France. Why he used the French arms on these coins is not known; at any rate these ryals were never coined after his first year and only three specimens are known to have survived.

Henry VIII and Edward VI issued no coins with "the king in a ship." The next to appear were ryals coined for one year (1553) by Mary (No. 6), which are the most beautiful coins of the series. They revert to the rose noble type of Edward IV, but substitute for the standing king the figure of the queen with sword and shield. The queen's face is a flattering portrait. The ship is now shown as a blunt-ended vessel, instead of the crescent of the earlier nobles. The obverse inscription includes the date in Roman numerals. The reverse type is again the rose and sun of Edward IV, but the inscription is changed to "A DNO FACTV EST ISTVD Z EST MIRAB IN OCVL NRIS." These coins are extremely rare and were not followed by similar coins with Philip's name added after their marriage (as was done with the silver coinage), nor was the opportunity taken to place both Philip and Mary on the ship—a striking coin indeed!

Under Elizabeth, ryals or rose nobles once more appeared, being struck with several mint or moneys'

marks, and according to the records, over a considerable period, although they are scarce. On these the rose noble type is followed (No. 7), but the queen appears with orb and scepter instead of sword and shield. On the majority of pieces the face, framed by ruff and crown, is a good portrait. The ship is now a true picture of the vessels sailed by Hawkins and Drake, with high stern and low bowsprit. On the reverse the inscription reverts to the former "JESVS AVTEM" etc. Certain of the Elizabeth ryals have peculiar obverse inscriptions in which occur the letters M P C A L, or M P R C A L. These inscriptions have been a long-standing puzzle. Ruding, in his "Annals of the Coinage of Great Britain" in 1760, quotes² "The learned and ingenious Dr. John Ward" as interpreting these inscriptions as "MAGNAE PROVINCIAE CAPTAE ASPICIIS ILLIVS," believing them to refer to the taking possession of Virginia in 1584 by Raleigh. This interpretation is at the expense of reading the final L as an I, and has not been generally accepted. The latest works on English coins (e.g., Oman, 1936) state that these letters have never been satisfactorily explained. We shall return to this question after surveying the continental imitations of the noble, give the true interpretation of these inscriptions and the proper attributions of the pieces.

The last issue of ryals was in the fourth coinage of James I in 1619 (No. 8). In this issue the ryal, although still of approximately the size of the original noble, valued at six shillings and eight pence, was the

half sovereign, or fifteen-shilling piece, illustrating the change of values of the noble metals in the course of three centuries. These James ryals are substantially rose nobles, with the king now shown carrying the shield of Great Britain, bearing the English, French, and Scottish arms. The face is an excellent and unmistakable portrait, the ship a good representation of the man-of-war of the period. The reverse inscription copies that of Mary "A DOMINO FACTVM EST" etc. These last nobles could not have been struck in very large numbers as they are very scarce, and with them the denomination disappears. It is to be regretted that a type so suitable to the "mistress of the seas" could not have continued through the times of Blake, Rodney, Nelson and more recent naval heroes, exhibiting the naval architecture and the costumes of their times.

IMITATIONS OF THE NOBLE³

The gold noble had a wide popularity in northeastern Europe, being "of as much note as the Florin and Ducat in the Southern parts."³ Snelling records that for several centuries the tolls of the Sound were payable in nobles, and that obligations, payments, etc. were often stipulated to be paid in these pieces, instead of being in marks of silver as had been the custom before. It circulated in Russia, where it had a special name meaning "ship coin." Counterstamps of continental cities are found; a specimen in the British Museum has the counterstamp of Danzig. A noble of Henry VI, with the

dated counterstamp of Haarlem, 1572, illustrates not only the wide circulation of these pieces, but the extended period during which they were in use.⁴ There is little doubt that close copies, often of inferior weight and purity, were made in continental Europe, as illustrated by hoards of pieces of coarse workmanship or blundered legends, such as one of Henry nobles found near Cologne,⁵ and evidently coined there.

We are however primarily concerned with imitations which differ from "counterfeits" in being more or less close imitations of the type, while being bona fide coinages of localities outside England. We thus start our survey with the country closest to England in the fourteenth century, which was the part of France occupied by England. France itself never copied the noble, just as England never copied the distinctive French types. In Aquitaine, however, where the French types were closely copied, there appears a noble of Edward, the Black Prince (No. 9). This piece is identical in type with the English noble of Edward III, with the sole difference that the obverse inscription reads "ED P GNS REGIS ANGLIE PRINCPS AQVITANIE." This coinage was evidently soon abandoned, for only a single example has been found. Nor was it revived after the conquest of France by Henry V, who initiated an Anglo-Gallic coinage distinctly different from both the English and the French coinages.

Proceeding now to the north, we find the Scots striking nobles under David II (1327-71). David, who was

a prisoner in England for many years, being released in 1357, carried back with him many English ideas. He initiated the issue of silver groats in Scotland, and his nobles (No. 10) were apparently part of the same monetary project. They correspond in weight and style with the fourth issue of Edward III. The obverse differs from the English coin in the king's shield, which bears the lion of Scotland, and the inscription, which reads "DAVID DEI GRA REX SCOTORVM." The reverse is identical with the English, except that the cruciform design is disposed diagonally with respect to the edge inscription, possibly to make it simulate the Scottish St. Andrew's cross. Several dies of this piece are known, but it is exceedingly rare and was not issued by later kings.

Passing from the British Isles and the English possessions in France to the Low Countries, we find that imitations of all types of the noble and rose noble were made for two centuries. These range from close copies obviously intended to deceive, to bona fide coinages of large districts and important rulers, fully inscribed to indicate their source.

Our first piece is an imitation, similar to the English nobles of Edward III in all respects except the inscription. The king in the ship carries the shield of England, and it is only by study of the obverse legend that one detects that it is not an English noble. This piece (No. 11) was struck by Walerand, Count of St. Pol and Ligny, 1371-1415, and is inscribed "WALLERD DEI GRA

COM DE LUNE." This coin is the only known example of a copy differing solely in the inscription, although it is not unlikely that it is a surviving representative of a perhaps common type; it would not be surprising to discover similar coins of other minor rulers.

The most important coinage of nobles in the Low Countries is that of the Dukes of Burgundy as Counts of Flanders. There is a nearly complete series from Philip le Hardi, 1389–1404, to Philip the son of Mary of Burgundy and Maximilian, struck probably at Ghent or Bruges in 1488. These pieces, during the reigns of Philip le Hardi, Jean Sans Peur and Philip le Bon (Nos. 12, 13, 14), closely copy the noble type, but the shield carried by the "king" bears the arms of the reigning duke, and the king's crown is replaced by a ducal coronet. The obverse inscription is "PHS DEI GRA DVX BVRG COMES Z DNS FLAND" for the two Philips, JOHS etc. for Jean Sans Peur. On the reverse the letter in the center is the initial of the ruler, P or I, or in some of the later ones a simple rosette. These pieces were of the same weight as the contemporary Henry nobles in England, but of less pure gold, and consequently their importation was legislated against in England.

Of Charles the Bold and his daughter Mary there are no nobles recorded, but Mary's son Philip issued, jointly with his father Maximilian, nobles and half nobles which present an interesting variation of design. The king is shown (No. 15) standing well *behind* the mainmast of the ship so that his figure is now in the left

half of the coin, instead of being the central feature it has heretofore been. On the half nobles (No. 16), of which there are several series with variations in the inscriptions, the reverse has the usual cruciform design, but on the nobles the cross is replaced by a shield with the Burgundian arms. Charles V issued no nobles, and those issued by his son Philip II are of the rose noble type, and fall under the next general division of the subject.

IMITATIONS OF THE ROSE NOBLE

The rose nobles, like their predecessors, the nobles, achieved a wide circulation. Specimens occur with counterstamps of Dutch provinces,⁶ imperial Germany,⁷ Riga (No. 17) and Danzig (No. 18). That close imitations were made is certain. There exist many specimens of broad flan, in low relief, of coarse workmanship, with the exact inscription of the Edward IV rose nobles,⁵ which are commonly called "Flemish." It has been surmised that these were struck by Edward IV during his year of exile in Flanders, between his first and second reigns. Since, however, the coinage of rose nobles had already ceased before his flight and was not resumed in his second reign, this appears improbable. It has also been surmised that these were struck by the Earl of Leicester, who petitioned Elizabeth to be allowed to send gold from the Netherlands to England to be coined—at a profit—into nobles. There is no clear evidence for this supposition; it is not clear why, if he coined

nobles, he should revert to the Edward IV type instead of copying the current Elizabeth ryals. It is more probable that the coins most plausibly described as Leicester nobles are the nobles of the United Provinces, which we shall describe later. We have ample documentary evidence that various mints in the Low Countries struck copies (we would call them "counterfeits") of many coins current in their time, and the item "Rosenobels op naam van Koning Edward van Engeland" occurs frequently in the mint records; it is therefore probable that these "Flemish" nobles belong in this category. Schulman⁸ definitely ascribes these broad flan nobles to the mint at Gorcum.

Taking up now the imitations which were not mere slavish copies, but adaptations with distinctive inscriptions, we find that these are confined entirely to the Low Countries, so that we cannot, as in our treatment of the noble, follow it outward from England through the closely neighboring Anglo-Gallic countries and Scotland. We should, however, note a handsome near-copy, made in Scotland under James VI, the "thistle noble" coined in 1588. This (No. 19) displays a ship on the obverse with the Scotch shield instead of the king's effigy, and with a thistle instead of a rose on the ship's side. The reverse shows a geometric design of lions, crosses and scepters, reminiscent of, but different from the reverse design of noble and rose noble.

We proceed now to the imitations of the rose noble type in the Low Countries. We have already noted that

Charles V coined no nobles. His son Philip II, as ruler of the Netherlands, re-introduced them in 1579, reproducing now the type of the rose noble of Edward IV, but with entirely different inscriptions. These rose nobles were struck for the provinces of Utrecht, Gelderland, Overijssel and Frisia. The Utrecht rose nobles (No. 20) show the effigy of the king in the ship, his shield bearing the arms of Utrecht, the flag a lion rampant. The obverse inscription is "PHS D G HISPANIAE REX DNS TRA." The reverse inscription is "CONCORDIA RES PARVAE CRESCVNT, 1579." The Gelderland rose nobles (No. 21) are closely similar, except that the king's shield bears the double rampant lion of Gelderland. The obverse inscription is "PHS D G HISPZ REX DVX GEL C ZVT." The reverse is the same as the Utrecht pieces.

The Overijssel rose noble is again similar (No. 22), the king's shield bearing rampant lions in two quarters, a horizontal bar in the other quarters; the flag a rampant lion. The reverse inscription is the same, the obverse, "PHS D G HISPANIAR REX AD TRANSISL."

The coinage of this series for Frisia is represented by a unique piece in the Dutch Royal collection (No. 23), illustrated by Schulman in his paper⁹ on the coins of the Ommelanden, 1579-91. It is necessary to have some historical and geographical background to understand the significance of the inscription and other details of this coin. At the period covered by the above dates a portion of Frisia and Groningen, the northern-

most provinces of Holland, formed the "Ommelanden," a district lying between the rivers Eems and Lauwer, and including a group of towns among which were Hunsingo and Fivelgo. On this coin we accordingly find the ship's flag bearing not the rampant lion but the diagonal geometrical pattern which forms the arms of the Ommelanden. The king's shield carries arms which are partly obliterated by wear, but among them those of Hunsingo and Fivelgo are recognizable. The inscription is "PHS D G HISP REX DNS FRI INT AMA Z LAVR" the last four words being abbreviations for INTER AMASUM ET LAUBACUM, a Latinized version of "between the Eems and the Lauwer." The reverse is identical in type and inscription with the Utrecht and Gelderland pieces.

After the first success of the revolt of the Netherlands the rose noble was continued without the name of Philip, but as a coinage of several provinces, and with altered inscriptions. These provincial rose nobles were issued by Zeeland and Frisia, according to Verkade,¹⁰ who records or pictures specimens (Nos. 24 and 25) which are of excessive rarity, and by Gelderland, Utrecht and Campen, the last two issues being comparatively common, indicating a copious coinage. None of these bear dates, but they must belong to the years 1580-81. The Gelderland rose noble (No. 26) is of interest because the figure of the king in the ship, and other details of the type (with the exception of the inscription) are so closely those of the Philip coin (No. 21) described above

as to indicate the same die cutter. The obverse inscription is now "MONETA NOVA AV DVC GELRIA COM Z." The reverse inscription, appropriate to the events of the time, is "DEVS TRANSFERT ET CONSTITVIT REGNA." The rose nobles of Utrecht (No. 27) and of Campen (No. 28) both carry the same reverse inscription as the Philip rose nobles which they superseded, "CONCORDIA RES PARVAE CRESCVNT." The obverse of the Utrecht piece shows the king's shield with the arms of Utrecht, his flag a lion rampant. The inscription is "MONE NOVA ORDINV TRAIECTEN." On the Campen pieces the king's shield bears the arms of the city of Campen, the flag the letter C (which is reversed on some specimens). The inscription is "MON NO AV CIV CAMPEN VALO TRANISVLAN"; or "the new gold coinage of the city of Campen, of the standard of Overijsel."

LATE IMITATIONS OF THE NOBLE

The rose noble was current in Holland until 1585 and was then refunded at ten guilders. Its coinage appears to have ceased about 1582, to be replaced, curiously enough, by a reversion to the type of the original noble, without the rose on the obverse, and with the cruciform design with lions and roses as on the original nobles of Edward III. These nobles were current at seven guilders.

This return to the original noble type appears to have

originated in the city of Ghent, which issued a series of Flemish or Ghent nobles whose standard of value is referred to on certain of the similar nobles of other localities. The Ghent series may therefore be appropriately described first. It consists of three varieties, the first, issued in 1582 (No. 29), shows the king in his ship, with a lion rampant on his shield. The ship flies a square standard on which appear three fleurs-de-lys, and below the standard on the stern of the ship appears a lion rampant. These fleurs-de-lys commemorate the installation of the Duc d'Alençon, brother of the King of France, as ruler of the Netherlands, at the instigation of William the Silent, who believed the country needed a sovereign with the prestige and backing of a great European royal house. The inscription is "MO AVR EA RESTAVR METROPOL GAND FLAND." On the reverse the inscription is "NISI DNS CVSTOD CIVITAT FRVSTRA VIGILATVR 82."

During the year 1582 a state visit of William the Silent to Ghent was planned. For this occasion a new die was cut which differed from the first in substituting for the three fleurs-de-lys in the standard, a pair of clasped hands (No. 30). Unfortunately the Duc d'Alençon proved unacceptable to the Dutch because of his intrigues and treachery and was expelled from the country. The meeting for which these coins were to be struck did not take place, and their coinage was ordered stopped. Only three specimens are known. A new de-

vice had of course to be adopted, and the nobles of 1583 (No. 31) carry a lion rampant on the standard in place of the fleurs-de-lys or clasped hands.

Nobles very similar to these Ghent pieces were struck for Overijssel, Campen, Gelderland, and Zeeland. The Overijssel noble (No. 32) is identical in type with the last Ghent nobles, including the rampant lion on shield and standard, varying only in the inscription. On the obverse this is "MONE NOV AVRE ORDIN TRANSSISSVLANAE." The reverse inscription, although different from the Ghent nobles, expresses the same sentiment. The Campen noble, which also was struck of double weight (No. 33), bears on shield and standard a lion rampant accompanied by the city shield. The obverse inscription is "MON AVR CIVI CAMPEN VALO FLAN," thus indicating adherence to the Flemish or Ghent standard, in contrast to the rose nobles, which, as above noted, were of the standard of Overijssel. The reverse inscription is a variation of the "NISI DOMINVS" inscription of Ghent. The Gelderland noble (No. 34) has the lion rampant on shield and standard, hardly distinguishable from the Ghent pieces. The obverse inscription is "MO AVREA DVC GELDRIAE COM ZVT FANL." The reverse inscription is again a variant of the Ghent inscription.

The last of this series of late nobles to be described is the issue of Zeeland (No. 35), which has more individuality than the other copies of the Ghent noble. The shield and standard on the obverse show the arms of

Zeeland, a lion rampant rising from the sea. The obverse inscription is "ZELAN DOMINE SALVA NOS PERIMVS." The reverse inscription is "MONETA NOVA AVREA COMIT ZELAND 83." Verkade pictures a specimen with date 84.

NOBLES OF THE UNITED PROVINCES

The last coins struck in the Netherlands bearing the type of the "king in a ship" were nobles of the United Provinces of date 1586 to 1595. These (No. 36) are of a design differing significantly from both the noble and the rose noble. The "king" is now a figure in full armor, with a closed helmet. He carries a sword, but in place of the shield a sheaf of arrows. The standard at the stern of the ship bears a lion rampant. No rose appears on the ship's side, but the rail of the ship bears a series of six shields exhibiting the arms of the six provinces. The reverse shows in the center a sheaf of arrows, and, radiating from this, a stellate design of wavering rays or flames. Pieces were struck in both Holland and Zeeland. The obverse inscription for the Holland issue was "CONCORDIA RES PARVAE CRESCVNT HOL"; for the Zeeland issue ZELA is substituted for HOL. The reverse inscription is "MO ORDIN PROVIN FOEDER BELGIAE," with the date, which is 1586 for the Holland piece pictured by Verkade, and 1595 for his Zeeland specimen.

These pieces, from their date, and from details of the type and inscription, which are similar to the Leicester

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dalers, may with some plausibility be considered to be the "Leicester nobles" which have never been positively identified. They are excessively rare; our figure is a reproduction of a woodcut given by Verkade. A search through illustrated sale catalogues of thirty years has shown only one representative of this coinage,¹¹ a half noble of 1587.

CLOSE IMITATIONS OF THE NOBLE, WITH SMALL VARIATIONS IN THE INSCRIPTIONS

A phenomenon of the coinage of the Low Countries in the sixteenth century was the coinage in various mints of close copies of popular and widely current foreign pieces, with changes, often minute, in the inscriptions. Thus we find the mint at Culemborg¹² listed as making:

Rose nobles
Double and half rose nobles
Double Spanish dukats
Hungarian ducats
Rigksdaalders, etc.

These pieces, on ordinary inspection, look like their originals, but on examining the inscriptions inserted letters are found such as A L or A V, abbreviations for AD LEGEM or AD VALOREM, and other letters which are abbreviations of the town or province by which they were issued. Thus we find double ducats pictured by Verkade with the well-known vis-a-vis portraits of Ferdinand and Isabella, with inscriptions:

DVCATVS R P ZWOL VALOR FERDI-
NAND, for Zwolle

DVCA R P IMP CAMPEN VA FERDINA, for
Campen

DVCAT OR DI WEST FRI VAL FERDIN, for
West Frisia

DVCATVS ORDI TRANSISSV VAL HISP,
for Overijsel

Among such close imitations are found several of the English noble, which are of special interest because from them we get the key to the attribution of the Elizabeth nobles, mentioned earlier as being heretofore unsolved.

Three examples of these imitations of the rose noble, taken from an article by Schulman⁹ on Dutch mints of the sixteenth century, suffice to illustrate these pieces. They are all so close in appearance to the Edward IV rose nobles as to be indistinguishable from them on any but the closest examination. The first (No. 37), of Arkel, bears the inscription "EDWARD D G REG ANG M DNI AR AV E DNS IB" (Edward dei gratia, rex angliae, moneta domini Arkelensis ad valorem Edwardi domini Iberniae).^{12a} It is obvious that on a superficial glance this coin would appear to be of EDWARD —DNS IB, yet it actually says it is of Arkel, of the value of Edward's coins.¹³

The second example (No. 38), of the mint of Culemborg, reads "MO ORD FRISI AD LEGEM EDWARD REG ANG," with the inscription so placed as to appear to begin with EDWARD.

The third example (No. 39), of the same mint with a similar inscription, shows another minor variation—the letter in the ship's flag is an F (Frisia) instead of the E shown by the other pieces.

THE COINAGE OF NOBLES BY MARIE DE BRIMEU,
PRINCESS OF CHIMAY, COUNTESS OF MEGEN, 1572–76

Chimay, a town of Hainault, where Froissart the chronicler is buried, is of interest numismatically for the coins issued by a sixteenth-century ruler, Marie de Brimeu.¹⁴ These coins were struck at the mint of Gorcum, which was notorious for its imitations of current coinages of the principal countries of the time. Among these are imitations of English nobles and rose nobles, of which two have been previously recognized as of Marie de Brimeu.

The first of these is an imitation of the noble of Henry VI, a crude piece (No. 40) which, similar in appearance to the original, bears the obverse inscription "HENRIC DI GRA REX ANGV L MAR B DNS HY," the inserted letters standing for Marie de Brimeu. The fact that thus over a century after the death of Henry VI it was considered profitable to imitate his coinage is striking evidence of the popularity of the original noble.

The second of these (No. 41) is an imitation of the rose noble of Edward IV, differing only in type from the original by the arms on the king's shield being possibly those of Brimeu and Croy (although so similar to the English arms as to be easily mistaken for them), and

by the letter in the king's standard, which is a reversed B instead of an E. The obverse inscription reads, starting at the bottom of the coin, "MARA B PRI D CHI CO D MAE AD LE EDWARD G REG ANG," thus giving in abbreviated form all the Princess' titles and stating the coin is *ad legem*, or according to the standard, of Edward.

We now come to the third example (No. 42), which has not been previously assigned to the Princess of Chimay, but from what has gone before, is obviously one of this series. This is furnished by those *ryals* of Elizabeth with the inserted letters M P R C A L, or M A D G P C A L. These are at once seen to be the same inserted letters as on the previous examples, which are recognized as the initials of Marie, Princess of Chimay; and so this outstanding problem of British numismatics is solved. This attribution is further substantiated by the list (1591) of coins minted at Gorcum, quoted by Schulman,⁸ in which appears "Dubbele en enkele Rozenobels op naam van Koningen Elisabeth en op naam van de prinses Van Chimay."

With this attribution before us the question arises why was it not made long ago. As a matter of fact it was correctly made, nearly two hundred years ago, by Snelling, in his "View of the Gold Coins and Coinage of England," 1763, but he failed to give sufficient information to make a case clear enough for later students to grasp. His attribution is in a footnote (p. 20, note 2), in which he says, "These *ryals* were counterfeited at

Gorcum in Holland, as appears from a placart of the Earl of Leicester: 'Rosatus Nobilis in Gorcum factus est nomine principis a Summeii cujus altera latus rosatu Nobili Anglico convenit altera hunc inscriptionem habet ELISABETH D. G. ANG F. D. G. P. C. A. L. REGINA.'"

What Snelling failed to say, if he knew it, was that "Summeii" was Chimay, which gives the C in the inscription, or that the name of the Princess was Marie, which gives the M or MA of some forms of the inscription. Without this information his statement was a mere assertion, correct, but unsupported by the necessary data for proof.

CONCLUSION

This survey of the English noble and its imitations does not pretend to be a complete corpus. For this it would be necessary to consult certain collections, such as those of the museums in Holland, which are at present inaccessible. Enough is here presented however to give an idea of the place of the noble in the coinage of its time, the extent of its circulation, its popularity, and the manner in which it, like other coinages of wide reception, was made the subject of imitations of varying degrees of fidelity.

LIST OF NOBLES AND IMITATIONS ILLUSTRATIVE OF THE TEXT

1. *Noble of Edward III, treaty period, 1361–69.

EDWARD: DEI: GRA: REX: ANGL: DNS:
HYB: Z: AQT. King crowned, standing in ship, holding sword and shield.

Rev. IHS: AVTEM: TRANSIENS: PER:
MEDIV: ILLORVM: IBAT: Floriated cross with lys at end of each limb, and E within an ornamented compartment in the center. In each angle of cross a lion passant, guardant, with crown above.

Author's Collection

2. *Noble of Richard II, 1377–99, struck at Calais.

RICARD: D: G: REX: ANGL: Z: FRANC:
D: HIB: Z: AQ: Similar to No. 1, except flag at stern of ship.

Rev. Similar to No. 1, except for R in center.

Author's Collection

3. *Noble of Henry VI, 1422–61.

HENRIC: DI: GRA: REX: ANGL: Z:
FRANC DNS: HYB: Similar to No. 1, except number of fleurs-de-lys in French arms of shield only three.

Rev. Similar to No. 1, except H in center.

Author's Collection

4. *Rose Noble or Ryal of Edward IV, 1461–83.

EDWARD: DI: GRA: REX: ANGL: Z:
FRANC: DNS: IB: King crowned, standing, facing
 in ship, holding sword and shield; full blown rose on
 side of ship; at stern, flag with letter E.

Rev. **IHS: AVT: TRANSIENS: PER:**
MEDIVM: ILLORVM: IBAT: Within arched tres-
 sure and trefoil in each spandrel, floriated cross with rose
 in center and lion surmounted by crown in each angle.

Author's Collection

5. *Ryal of Henry VII, 1485–1509.

HENRIC: DI: GRA: REX: ANGL: Z:
FRANC: DNS: IBAR: King standing facing in ship
 and holding sword and shield; flag with **h** at prow and
 another with dragon at stern.

Rev. **IHS: AVTEM: TRANSIENS: PER:**
MEDIV: ILLORV: IBAT: Small shield with arms of
 France on double rose.

British Museum (Grueber 373)

6. *Ryal of Mary, 1553–58.

MARIA: I: D: G: ANG: FRA: Z: HIB:
REGINA: M.D.LIII: Queen crowned, standing fac-
 ing, holding sword and shield; full blown rose on side of
 ship; at stern, flag with letter M.

Rev. **A: DNO: FACT V'EST: ISTVD: Z:**
EST: MIRABI': IN: OCVL. NR IS. Similar to No. 4.

Author's Collection

7. *Ryal of Elizabeth, 1558–1603.

ELIZAB: D: G: ANG: FR: ET: HIB: REGINA: The queen nearly facing, standing in ship and holding scepter and orb; ship with high quarter-deck, rose on its side; at prow, flag with E.

Rev. Type and inscription as No. 4.

Author's Collection

8. *Ryal of James I, 1603–25.

IACOBVS: D: G: MAG: BRIT: FRAN: ET: HIB: REX: King standing in two-masted ship, crowned and holding sword and shield; flag with I at prow, rose on side.

Rev. As No. 6.

Mint-mark on obv. and rev.: a castle.

Author's Collection

9. *Noble of Edward the Black Prince, 1330–76.*

EDWARD: PO: GNS: REG: ANGL: DNS: AQUITANIE: King crowned, standing in ship, holding sword and shield.

Rev. **IHC: AVTEM: TRANSIENS: PER: MEDIV: ILLORVM: IBAT:** Floriated cross with lys at end of each limb, and E within an ornamented compartment in the center. In each angle of cross a lion passant, guardant, with crown above.

Motte Collection, No. 283 (H. Rolland, 1922)

10. *Noble of David II of Scotland, 1329–71.

DAVID: DEI: GRA: REX: SCOTORUM:

The King crowned, standing facing in a ship, holding sword and shield with arms of Scotland.

Rev. IHS: AVTEM: TRANSIENS: P: MEDIVM: ILLORVM: IBAT: Identical with No. 1, except rosette in center, and floriated cross is placed diagonally with respect to beginning of legend (St. Andrew's cross).

British Museum (Grueber 24)

11. *Noble of Walerand, Count of St. Pol and Ligny, 1371-1415.*

WALLERD: DEI: GRA: COM: DE: LUNE: PO: CO: Identical type to that of Edward III (No. 1).

Rev. As No. 1, except rosette in center.

Beistegui Coll. (Babelon), Pl. XXXVI, No. 661

***12.** *Noble of Philip le Hardi, Duke of Burgundy, 1384-1404.*

PHS: DEI: GRA: DVX: BURG: COMES: Z: DNS: FLAND: Standing figure of duke in ship, wearing coronet, and carrying sword and shield with arms of Duchy of Burgundy.

Rev. As No. 1, except P in center of cross.

Author's Collection

***13.** *Noble of Jean Sans Peur, Duke of Burgundy, 1404-37.*

IOHS: DEI: GRA: DVX: BVRG: COMES: Z:

DNS: FLAND: As No. 12, except arms on shield have added escutcheon.

Rev. As No. 12, except I in center of cross.

Bourgey Sale (Babit Coll.), March 28, 1927, No. 1383

***14. Noble of Philip le Bon, Duke of Burgundy, 1437-60.**

PHS: DEI: GRA: DVX: BURG: COMES: Z:

DNS: FLAND: As No. 12, except arms on shield have added escutcheon.

Rev. As Nos. 12 and 13, except rosette in center of cross.

Author's Collection

***15. Noble of Maximilian and Philip of Burgundy, 1482-94.**

M: D: G: RO: REX: ET: PHS: ARCHIDVCES: AV: B: CO: HO: King in three-masted ship, standing behind mainmast and sail, carrying sword and orb.

Rev. **MO: AVREA: RO: REGIS: ET: PHI: ARCHID: AV. BO: CO: HOR:** Shield in middle of floriated cross with crowns and eagles in compartments.

Schulman Sale, Jan. 1931, No. 1733

***16. Half Noble of Maximilian and Philip of Burgundy, 1488.**

MO: RO: RE: Z: PHI: ARDVC: AVS: BO:

BR: CO: HO: King standing facing in three-masted ship, behind mainmast, carrying sword, orb, and shield with Burgundian arms.

Rev. **REFORMACIO: GVERRE: PAX: EST: A' 1488.** Floriated cross, crowns in compartments rosette in center.

Author's Collection

***17.** *Rose Noble of Edward IV, 1461-83, with Counterstamp of Riga.*

EDWARD: DI: GRA: REX: ANGL: Z: FRANC: DNS: IB: Similar to No. 4, except for counterstamp of crossed keys in right field above ship.

Rev. As No. 4.

Author's Collection

***18.** *Rose Noble of Edward IV, 1461-83, with Counterstamp of Danzig.*

EDWARD: DI: GRA: REX: ANGL: Z: FRANC: DNS: IB: Similar to No. 4, except for counterstamp of crown over double cross in waves below ship.

Rev. As No. 4.

Author's Collection

***19.** *Scottish Thistle Noble of James VI, 1567-1603.*

IACOBUS: 6: DEI: GRATIA: REX: SCOTURUM: Single-masted ship carrying crowned Scot-

tish shield in waist; standards fore and aft, the left inscribed I, the right 6; thistle on side of ship.

Rev. FLORENT: SCEPT: PIIS: REGNA: HIS: IOVA: DAT: NVMERAT: Q: Within an ornamented quarterfoil two scepters in saltire, with crown at each end; thistle in center; outside the quarterfoil, thistle-head in each spandrel, and inside in each arch, crowned lion.

Author's Collection

20. *Rose Noble of Philip II for Utrecht, 1575.*

PHS: D: G: HISPANIAE: REX: DNS: TRA: King in ship, bearing sword and shield with arms of Utrecht; rose with sun rays superposed on side of ship; square standard at stern of ship bearing rampant lion.

Rev. CONCORDIA: RES: PARVAE: CRES-
CVNT: 1579: Similar to Edward IV rose noble, No. 4, except that lions under crown are rampant instead of passant.

Schulman Sale, May 22, 1911, No. 78

*21. *Rose Noble of Philip II for Gelderland, 1579.*

PHS: D: G: HISPZ: REX: DVX: GEL: C: ZVT. King standing facing in ship bearing sword and shield with arms of Gelderland: square standard at stern of ship with broad border around lion rampant; rose on side of ship.

Rev. Similar to No. 20.

Muller Sale, December 12, 1904, Pl. IX, No. 3959

22. *Rose Noble of Philip II for Overijsel.*

PHS: D: G: HISPANIAR: REX: AD: TRANSISL: King standing facing in ship bearing sword and shield with arms of Overijsel; on flag rampant lion.

Rev. Same as Nos. 19 and 20.

Verkade, Pl. 133, Fig. 1; Snelling, Pl. 7, No. 8

23. *Rose Noble of Philip II for the Ommelanden.*

PHS: D: G: HISP: REX: DNS: FRI: INT: AMA: Z: LAVR. King standing facing carrying shield bearing arms of Hunsingo and Fivelgo. Flag with arms of Ommelanden.

Rev. Same as Nos. 19–21.

Schulman, "De Munten der Ommelanden," Fig. 1

24. *Rose Noble of Zeeland.*

MON: NOV: AVR: COMITAT: ZELAN: King standing facing in ship bearing sword and shield with arms of Zeeland. Flag at stern with arms of Zeeland.

Rev. **SI: DEVS: NOBISCVM: QVIS: CONTRA: NOS:** As Edward IV rose noble, No. 4.

Verkade, Pl. 77, Fig. 1

25. *Rose Noble of Frisia.*

MO: NOVA: AVRE: ORDINVM: FRISI: *Helmeted* figure of king in ship, bearing sword and shield with arms of Frisia.

Rev. NISI: TV: DOMINE: NOBISCVM:
FRVSTRA: As No. 23.

Verkade, Pl. 117, Fig. 3

26. *Rose Noble of Gelderland.

MONETA: NOVA: AV: DVC: GELRIE:
COM: Z: Same type and style as No. 20.

Rev. DEVS: TRANSFERT: ET: CONSTI-
TVIT: REGNA: Similar to Nos. 21 and 22.

Author's Collection

27. *Rose Noble of Utrecht.

MONE: NOVA: ORDINV: TRAIECTEN:
Similar to No. 21, except rose on ship has checkered
center instead of superposed sun's rays.

Rev. CONCORDIA: RES: PARVAE: CRES-
CVNT: Rose and sun, lions and crowns closely similar
to Edward IV rose noble, No. 4.

Author's Collection

28. *Rose Noble of Campen.

MON: NO: AV: CIVI: CAMPEN: VALO:
TRAN: ISVLAN: Similar to No. 27, except king's
shield bears arms of Campen; ship's standard inscribed C.

Rev. Type and inscription similar to Utrecht
rose noble, No. 27.

Author's Collection

29. *Noble of Ghent, 1582, first type.

MO: AVREA: RESTAVR: METROPOL:

GAND: FLAND: Letters N T in field to left and right of king's head. King standing facing in center of ship, bearing sword and shield with rampant lion to l.; square standard at stern of ship, bearing three fleurs-de-lys; below, lion rampant.

Rev. **NISI: DNS: CVSTOD: CIVITAT: FRVSTRA: VIGILATVR: 82:** Floriated cross with lions and crown, similar to Edward III noble, No. 1, but with rosette at center.

Author's Collection

***30.** *Noble of Ghent, 1582, second type.*

As No. 29, except ship's standard carries two clasped hands.

Author's Collection

***31.** *Noble of Ghent, 1583, third type.*

As Nos. 29 and 30, except ship's standard now carries rampant lion, which has been moved up from space between standard and ship's stern.

Reverse inscription now ends with date 83.

Author's Collection

***32.** *Noble of Overijssel, 1583.*

MONE: NOV: AVRE: ORDIN: TRANSIS-SVLANLAE: Same as No. 31.

Rev. **NISI: TV: DOMINE: NOS: SERVAVERIS: FRVSTRA: 83:** Same as Nos. 29, 30, 31.

Author's Collection

33. *Double Noble of Campen.**MON: AVR: CIVI: CAMPEN: VALO: FLAN:**

King standing facing in ship, bearing sword and shield. Shield bears rampant lion with shield on which is triple-towered gate. Ship's standard bears same device as king's shield.

Rev. **NISI: DOMINVS: SERVAVERIT: CIVITATEM: FRVSTEM:** Same as No. 28.

*Author's Collection****34. *Noble of Gelderland.*****MO: AUREA: DVC: GELDRIAE: COM: Z**

VT FANL: Closely similar to No. 30, except double border to ship's standard, and omission of letters N T in field.

Rev. **NISI: QVIA: DNS: ERAT: IN: NOBIS: FORTE: DEGLVTISS:** As No. 1, except rosette in center of cross.

*Author's Collection****35. *Noble of Zeeland, 1583.*****ZELAN: DOMINE: SALVA: NOS: PERI-**

MVS: King standing facing in ship, with sword and shield; square standard at stern of ship. King's shield and standard bear rampant lion emerging from waves.

Rev. **MONETA: NOVA: AVREA: COMIT: ZELAND: 83:** As No. 28.

Schulman Sale, June 8, 1937, Pl. XII, No. 384

34 FOREIGN IMITATIONS

***36.** *Noble of United Provinces, 1586.*

CONCORDIA: RES: PARVAE: CRESCVNT:

HOL: Helmeted figure with sword standing facing in ship. Ship carries arms of six provinces along rail; square standard at stern with rampant lion.

Rev. MO: ORDIN: PROVIN: FOEDER: BELGIAE: 1586: Sun's rays or flames radiating from center disc, on which sheaf of arrows.

Verkade, Pl. 39, Fig. 1

37. *Rose Noble of Arkel.*

BD: WARD: D: G: RBG: ANG: M: DNI:

AR: A.V.B.: DNS: IB:^{12a} King standing facing in ship, similar in appearance to Edward IV rose nobles (No. 4). The king's shield displays in two quarters three fleurs-de-lys similar to the French arms borne by Edward; in the other two quarters a double row of lozenges, these constituting the arms of Arkel.

Rev. Exact copy of Edward IV rose noble (No. 4).

*Schulman, De Munten der Ommelanden, p. 26.
Dutch Royal Cabinet*

38. *Rose Noble of Frisia.*

MO: ORD: FRISI: AD: LEGEM: EDWARD:

REG: ANG: Type identical with Edward IV rose nobles, with English arms on shield.

Rev. Exact copy of Edward IV rose noble.

*Schulman, De Munten der Ommelanden, p. 36.
Dutch Royal Cabinet*

39. *Rose Noble of Frisia.*

MO: ORD: FRISIAE: AD: LEGEM: EDWARD: FRAN: Type identical with Edward IV rose noble, except that ship's flag carries the letter F.

Rev. Exact copy of Edward IV rose noble.

*Schulman, De Munten der Ommelanden, p. 36.
Dutch Royal Cabinet*

40. *Noble of Marie of Brimeu, Princess of Chimay, 1572-76, in imitation of Henry VI of England.*

HENRIC: DI: GRA: REX: ANGVL: MAR: B: DNS: HY: King standing facing in ship with sword and shield bearing arms of England.

Rev. Inscription blundered and meaningless. Floriated cross with lions and crown in compartments. H in center.

Schulman Sale, October 4, 1911, Pl. V, No. 868

41. *Rose Noble of Marie of Brimeu, 1572-76, in imitation of Edward IV of England.*

EDWARD: G: REG: ANG: MAR: A: B: PRI: D: CHI: COD: MAE: ADLE: King standing facing in ship, bearing sword and shield consisting of fleurs-de-lys in two quarters, horizontal bars in others (arms of Brimeu and Croy); rose on side of ship: ship's standard carries inverted B.

Rev. As No. 4.

Cuypers, Rev. Num. Belge, 1851, p. 184

- *42. *Rose Noble of Marie of Brimeu, 1572-76,
in imitation of Elizabeth of England.*

ELIZABET: ANGL: MA: D: G: P: C: A: L:

REGINAE: Similar to ryal of Elizabeth, No. 7, except
that letter on ship's standard can be read as B.

Rev. As No. 7.

Drabble Sale, July 1939, Pl. VI, No. 150

NOTES

- ¹ For references see the bibliography quoted in Brooke's "English Coins."
- ² Vol. II, 3rd ed., 1840, p. 356, footnote to description of Plate X, 4.
- ³ An early discussion of this subject, "A View of Nobles Struck Abroad, in Imitation of English," is included in Snelling, "On the Coins of Great Britain, France and Ireland," Part V, 1769, p. 53 and Plate 7.
- ⁴ Schulman Sale Catalogue, May 22, 1911, Plate II, Fig. 78.
- ⁵ *Numismatic Chronicle*, 3rd Series, Vol. XIII, p. 26.
- ⁶ Schulman Sale Catalogue, January, 1931, No. 1924.
- ⁷ Mentioned by Hazlitt, "Coinage of the European Continent," Supplement, p. 108.
- ⁸ "De Muntstempels der Munt te Gorinchem," *Jaarboek voor Munt-en Penningkunde*, Vol. IV, 1917, pp. 41-73.
- ⁹ "De Munten der Ommelanden, 1579-1591," *Jaarboek voor Munt-en Penningkunde*, Vol. II, 1915, pp. 129-181.
- ¹⁰ P. Verkade, "Muntboek," Scheedam, 1848. The illustrations, which are woodcuts, are often reproductions of old "placarts."
- ¹¹ F. Muller Catalogue, Dec. 1904, Plate V, No. 1037.
- ¹² Quoted by Schulman, "De Munten der Ommelanden," cf. note 8, above.
- ^{12a} This piece, illustrated by Schulman, "De Munten der Ommelanden," has in its obverse inscription three occurrences of the use of a B for E.
- ¹³ Schulman, *Jaarboek voor Munt-en Penningkunde*, Vol. XVII, 1930, p. 81, describes one of these Arkel imitations with the counterstamp of Riga, showing that they circulated along with the original English pieces.
- ¹⁴ Cuypers, "Notice Sur Les Monnaies des Comtes de Megen," *Rev. de la Numismatique Belge*, 2nd series, Vol. I, p. 162. See also Van der Chijs, "Die Munten der Nederlanden," Vol. VIII, Pl. III, Nos. 22 and 23.

PLATES

IMITATIONS OF THE ENGLISH NOBLE



1



2



3



PLATE I



4



5



6



IMITATIONS OF THE ENGLISH NOBLE



7



8



10

PLATE II



12



13



14



IMITATIONS OF THE ENGLISH NOBLE



15



16



17



PLATE III



18



19



21



IMITATIONS OF THE ENGLISH NOBLE



26



27



28



PLATE IV



29



30



31



IMITATIONS OF THE ENGLISH NOBLE



32



33



34



PLATE V



35



36

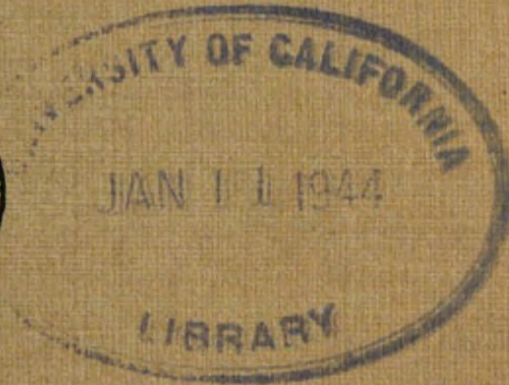


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NUMISMATIC NOTES
AND MONOGRAPHS

No. 94



GOLD AND SILVER COIN STAND-
ARDS IN THE ROMAN EMPIRE

BY
LOUIS C. WEST

THE AMERICAN NUMISMATIC SOCIETY
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BY LOUIS C. WEST

INTRODUCTION

The three centuries from Augustus to Diocletian witnessed great changes in the political, social, and economic life of the Roman Empire. At the same time, important changes were taking place in the imperial coinage. It must not be forgotten, much as we may criticize the financial policy of the Empire during these three centuries, that the government did succeed in maintaining its gold coinage as a medium of exchange throughout the entire period. For over two-thirds of this period it also maintained a silver currency in which its subjects had confidence. At no time in its history, unless perhaps at the middle of the third century, did the Roman government subject its gold coinage to as sudden and drastic a reduction as that which occurred in this country in 1933. And when we look askance at the depreciated denarius of a Septimius or a Caracalla we should not forget that 60% of the value of our silver dollar is confidence rather than worth.¹ These facts do not mean, unfortunately, that the history of the gold and silver coinage of the Roman Empire or of its monetary policy is easy to

¹ As bullion it has a market value of about 40 cents. (February, 1941.)

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understand. The importance of study of the imperial coinage was emphasized by George Finlay nearly a century ago: "In reviewing the various causes which contributed to the decline of the wealth and to the diminution of the population of the Roman Empire, it is necessary to take into account the depreciation of the coinage, which frequently robbed large classes of the industrious citizens of a great part of their wealth, reduced the amount of property in the empire, produced confusion in legal contracts and anarchy in prices. . . . The evils which must have resulted from the enormous depreciation of the Roman coinage at several periods can only be clearly understood by a chronological record of the principal changes—by remembering that each issue of a depreciated currency was an act of bankruptcy on the part of the reigning emperor. . . ."

To make the problem more difficult, the literary and epigraphical evidence is rare and sometimes unreliable. Often the interpretation of the evidence is a matter for lengthy disputes. It hardly needs to be said that there is no ancient account either of the money or of monetary policy. All our evidence, aside from the coins themselves, is composed of more or less casual statements found in documents, both on stone and papyri, or in the literature that has been preserved.

As evidence from other sources is so often contradictory and confusing, the purpose of this paper is to determine the official ratio of gold and silver from an examination of the weights of all imperial

gold and silver coins.² It is fortunate that so many Roman coins are still extant. In addition to almost countless thousands of varieties of subsidiary coins, there has survived a surprising number of gold coins. The tables which form part of this work list approximately nine thousand whose weights are available, and there are many more about which that information is lacking.³

² A study of this material by the present author appeared in the *American Journal of Philology*, Vol. LXII, pp. 289–301. For the sake of comparison, some of the various ratios determined by different scholars for the imperial period are cited:

- 1 : 13,—Mattingly, *Roman Coins*, 128. Based on the Neronian reform (A.D. 63/64) of the silver and allowing for the debasement of the denarius.
- 1 : 7.3,—Heichelheim, *Klio*, XXV (1932), 124. Based on the Jewish poll tax in A.D. 72/73 (Wilcken, *Grundzüge*, II. 61).
- 1 : 10,—Mickwitz, *Geld und Wirtschaft*, 56. Based on Trajan's reform (A.D. 99/100).
- 1 : 8.2,—Kubitschek, *Quinquennium*, 103. Based on Lucian, *Pseudologistes* 30 (Antoninus Pius?).
- 1 : 5.86,—Kubitschek, *Quinquennium*, 105. Based on CIG. 5008, 5010 (A.D. 241/4).
- 1 : 7.82; 1 : 9.76; 1 : 6.50,—Giesecke, *Geldwesen*, 222. For the three periods into which he divides the coinage of Aurelian (A.D. 270–275).
- 1 : 8 or 1 : 9,—Heichelheim in comment on *P. Giess. Univ. Bibl.* 22 and in *Klio*, XXV (1932), 124 (A.D. 284–305).
- 1 : 7.8,—Giesecke, *Geldwesen*, 222. Based on Diocletian's reform (A.D. 294).
- 1 : 20.8,—Mickwitz, *Geld und Wirtschaft*, 69. Based on Diocletian's edict (A.D. 301).
- 1 : 13½,—Heichelheim, *Klio*, XXIX (1936), 131. Based on P. O. 1653 (A.D. 306).

³ Information about weights has been gathered from museum catalogues, auction catalogues, articles in various numismatic and archaeological journals, publications of specific hoards, and from the unpublished collections of the Metropolitan Museum of Art, the American Numismatic Society, Princeton University, and the private collection of the late Mr. E. T. Newell. It is unfortunate

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The question whether the gold coinage was sufficient to serve its purpose as a medium of exchange is now impossible of definite answer. It is sometimes said that gold coins were of little monetary importance during the third century. Mickwitz⁴ disagrees with this, but believes that earlier coins were generally used in this period and that new coins were struck only in comparatively limited numbers. This hardly seems a fair inference from the numbers now extant. Of more importance than the quantity of gold in circulation is the velocity of its circulation, but on this subject nothing, unfortunately, is known.

Until the time of Elagabalus the metrology of gold coins may perhaps best be studied by means of frequency tables. By grouping coins according to their weights, the intent of the mint officials may be discovered as well as changes in standard.^{4a} These successive changes may be briefly summarized. Augustus first struck the aureus at the rate of forty, then possibly of forty-one⁵ and, at the close of his reign, of forty-two to the pound. The next great change occurred in A.D. 63 or 64, when Nero reduced the standard to forty-five to the pound.⁶ Here it stayed, with a few exceptions, until the time of

that such works as those by Strack give no weights. Blanchet enumerates about 12,000 gold coins in his work on Gallic and German hoards and mentions other hoards where no numbers are given. Of only a small part of these can weights ever be had.

⁴ *Geld und Wirtschaft*, 65.

^{4a} See Hill, *Num. Chron.*, 1924, 76ff., for a concise account of this method.

⁵ See Ondrouch, *Der röm. Denarfund von Vyskovce*, 9.

⁶ See for both Augustus and Nero, Pliny, *H. N.* XXXIII. 3, 13.

Macrinus in A.D. 218. These exceptions are as follows: the Spanish mint of Galba apparently did not accept the new standard of Nero, although Galba's mint at Rome issued the lighter coins. Early in his reign Domitian definitely abandoned the Neronian standard. His heavier weights were maintained, with indifferent success to be sure, until Trajan's second year. Both Didius Julianus and Caracalla made efforts to reduce the standard to fifty to the pound,—a change apparently followed by the mint at Rome operated by Elagabalus, but not adopted by the Antioch mint of the same ruler.⁷

For about half of the third century, statements as to the standards adopted by the various rulers are little more than guesses.⁸ Under Gordian III the standard seems to have been reduced to seventy to the pound; under Trebonianus Gallus to eighty to the pound; under Valerian and Gallienus there seems to have been a further decline and then apparently an increase in weight which under Claudius II seems to represent sixty to the pound. Aurelian made an effort to improve weights, as did Probus, who seemingly attempted a standard of fifty to the pound. This attempt was unsuccessful, for the coinage of Carus falls to a standard of seventy to the pound. Diocletian's earlier coins were on this same basis, his later coins on the basis of sixty to the pound. The change to a heavier standard was too optimistic, for when Constantine finally stabilized the currency he replaced the

⁷ See Table B.

⁸ See Table B.

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aureus with the solidus, which was struck at the rate of seventy-two to the pound.

While the aureus was the head of the monetary system, the denarius, which was the chief silver coin, was of far greater practical importance. Tariffed at twenty-five to the aureus, it represented in the first century at least, a good day's wage; in fact it was more than the basic army pay fixed by Augustus and Tiberius, a wage that had no allowance for food or clothing.⁹

In discussing the denarius, there is not only the matter of weight to be considered, but there is the progressive lowering of the percentage of silver in the coin also.¹⁰ The practical importance of this progressive debasement of the denarius depends upon whether or not the Roman government considered it more or less a token coin, and was both willing and able to exchange it at a fixed rate for the aureus. Ordinary commercial convenience demanded that there be a fixed ratio between the two coins. The moment the general public had reason to believe that this fixed ratio was to be abandoned, there would have been financial chaos.

The Roman pound contained twelve ounces, each of which contained twenty-four scruples or grammata. The theoretical (not the actual) weights for coins struck at the respective numbers to the pound of metal are as follows:

⁹ Tacitus, *Ann.* I. 17.6: 26.

¹⁰ See chiefly Hammer, *Die Feingehalt der griechischen und römischen Münzen* (Zeit. für Num. 1908), 97 ff. Other analyses are given by Mickwitz, *Geld und Wirtschaft*, 40; Ondrouch, *loc. cit.*; Mattingly, *BMC passim.*; all later statements here as to fineness of coins are based primarily on Hammer.

Pieces to pound	Weight in grains	Weight in metric grams	Weight in Roman scruples
40	126.4	8.186	7.2
41	123.3	7.987	7.0
42	120.4	7.796	6.857
45	112.4	7.277	6.4
50	101.2	6.549	5.76
60	84.3	5.457	4.8
70	72.2	4.678	4.114
72	70.2	4.55	4.0
80	63.2	4.093	3.60
90	56.2	3.638	3.20

Table A summarizes the facts that indicate the ratios between gold and silver under the various rulers from Augustus to Diocletian.

Pliny's statement that under Augustus the ratio of gold to silver was 1 : 12½ may be compared with the figure of 1 : 11.97 found from the coins.¹¹ Similarly, the theoretical ratio of 1 : 11.72 for Nero's reformed coinage may be compared with the figure of 1 : 11.26 found from the coins. Nero's change represented an increase of about 6% in the relative value of silver.

The deviation of the ratios based on the weights of the coins from the ratios found from the figures given by Pliny is approximately the same both for Augustus and Nero. Later ratios found up to the time of Marcus Aurelius indicate that 1 : 11.72 continued to be the theoretical ratio. It is noteworthy that Domitian's currency reform meant no appreciable difference in the relative value of gold and silver. Some change, however, seems to have taken place in the reign of Commodus. His aurei seem slightly

¹¹ Pliny, *N. H.* XXXIII, 3.13.

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TABLE A—Part 1

THE RATIO OF GOLD TO SILVER FROM THE COIN WEIGHTS¹²

		Based On	
		25 denarii to aureus	15 antoniniani to aureus
Augustus	43/30	1 : 11.69	
	III viri	1 : 12.20	
	others to 11 A. D.	1 : 11.97	
Tiberius		1 : 11.82	
Caligula		1 : 11.94	
Claudius		1 : 12.33	
Nero	54/63	1 : 11.66	
	64/68	1 : 11.26	
Galba	Rome	1 : 11.26	
	Spain	1 : 10.98	
Otho		1 : 11.71	
Vitellius		1 : 11.44	
Vespasian		1 : 10.71	
Titus		1 : 11.19	
Domitian	81/82	1 : 10.94	
	82/96	1 : 11.0	
Nerva		1 : 10.81	
Trajan	98/99	1 : 10.97	
	100/17	1 : 11.04	
Hadrian		1 : 11.26	
Pius		1 : 11.49	
Marcus		1 : 11.49	
Commodus		1 : 10.02	
Pertinax		1 : 10.84	
Didius		1 : 10.72	
Septimius		1 : 10.90	
Caracalla	211/15	1 : 11.03	
	215/17	1 : 12.22	1 : 11.59
Macrinus		1 : 11.07	1 : 10.71
Elagabalus	Rome	1 : 12.03	1 : 12.04
	Antioch	1 : 9.4	

¹² The method of figuring the ratio of gold to silver may be illustrated by the coins of Tiberius. His denarius weighed 56.29 grains (Table D). Multiply by 25 (the number of denarii to an aureus), then divide by 119 (the weight of the aureus given in Table B). The result, 11.82, appears in Table A as the ratio.

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TABLE A—Part 2
RATIO OF GOLD TO SILVER USING ACTUAL WEIGHTS OF SILVER AND ESTIMATED WEIGHT OF GOLD COINS¹³

	Number of aurei to pound	Assuming 25 denarii to the aureus	Assuming 15 antoniniani to the aureus	No. of antonini- in contemporary aureus	No. of antonini- and in a pound of gold
Alexander Severus	50	1 : 11.9			(Assuming ratio of 1 : 14)
Maximinus	50	1 : 12.10			
Pupienus, etc.	50		1 : 11.76		
Gordian III	60		1 : 12.15		
Philip	70		1 : 13.4		
Decius	70		1 : 13.0		
Trebonianus, etc.	80		1 : 13.0		
Aemilianus	80		1 : 12.8		
Valerian and Gallienus	70				
	80				
	90		1 : 13.9	210	18900
Claudius	60			540	32400
Aurelian, pre-reform	60			540	32400
reform	50			600	30000
Tacitus	70			300	21000
Probus	60			510	30600
Carus	70			420	29400
Carinus	60			390	23400
Diocletian	70				
	60	1 : 14.4			(25000) ¹⁴

¹³ The procedure here is the same as before except that no definite point of concentration can be found for these gold coins and that weights based on the number to the pound are used.

¹⁴ This assumes that an antoninianus was worth two denarii at this time (*Edict Dioclet.* XXX. 1). This also disregards the difficulty presented by the seemingly different price of gold in line 2 of the same section of the Edict, which might well be a charge for drawing gold rather than a price for bullion.

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heavier than those of Marcus, while his denarii show a decided decrease in weight. This decrease in the denarius was accompanied by equally pronounced decreases in the weights of the eastern imperial drachmae. In view of the fact that none of these decreased weights were adopted either by Pertinax or Septimius it would seem probable that Commodus attempted to correct the effect of his own extravagance and the financial disturbances caused by his father's wars by a drastic cut in the weight of the silver coin.

In the period from A.D. 193 to 215 the ratio between gold and silver, as shown by the coins, remained somewhat less than it had been earlier in the second century, but it still seems within the range of possibilities for the Neronian ratio of 1 : 11.72.

With the introduction of the antoninianus by Caracalla in A.D. 215 and the simultaneous decrease in weight of the aureus there is a change in the ratio of gold and silver. This apparently is the first indication of a decided fall in the relative value of silver to gold. It may be mentioned that during the fourth century the relative value of silver sank still further, until the ratio reached 1 : 18.¹⁵ Macrinus did not adopt the new weights of Caracalla for his gold but coined on the pre-reform standard (see Table B). Under Elagabalus as under Galba we find two distinct weights in the gold aureus, one on the reformed standard of Caracalla in the mint at Rome, the other issued by the mint at Antioch on Cara-

¹⁵ See Preisigke, *SB.*, 6086.

calla's pre-reform standard. Perhaps it is an accident due to the small number of coins involved that the denarii issued at Antioch are considerably lighter in weight than the denarii issued at Rome. The fact that the ratios found by using the weights of the antoniniani and denarii issued at Rome are practically identical and that they are in reasonable accord with the ratio for the period A.D. 215 to 217 would seem to indicate that the Antioch ratio may be disregarded.

After Alexander and Maximinus the antoninianus became the common silver coin and the denarius ceased to be issued in commercial quantities, though some were coined later and the coin itself did not disappear entirely from circulation. If one assumes that Alexander, Maximinus, Pupienus and Balbinus coined their gold on the basis of 50 to the pound then the ratio of gold to silver for these three reigns is $1 : 12\frac{1}{2}$ or $1 : 13$.

For the rest of the third century we must depend upon conjecture. Contemporary references indicate no pronounced depreciation in the market value of the denarius until the time of Valerian. From that time until the appearance of the Edict on Prices we are handicapped by an almost complete absence of references to money outside of Egypt. A price of 200 denarii for an altar, that is found in a monument dated A.D. 279/80, is almost the only instance.¹⁶

It was under Valerian and Gallienus that the public lost confidence in the silver coin. While the

¹⁶ *IGRR*, IV, 893.

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better coins of these two rulers contained about 40 and 50 percent of silver respectively, the poor coins of Gallienus had only about 6 per cent of silver. It must have been at this time that an official revaluation of the antoninianus took place, for with political and financial conditions as they were, no government could have maintained the historic relationship. Modern analogies show that when monetary values are undergoing pressure from depreciation, those values slip gradually, but when the climax is reached, the actual débâcle comes quickly. This catastrophe seems to have happened under Gallienus. Unlike the German financial crash after the World War of 1914–18, which reached its climax and was corrected in a period of about six months in 1923, the Roman financial collapse was not finally corrected until some sixty years had passed.

If one assumes that the relation between gold and silver remained at 1 : 14 for the period from A.D. 260 to the time of Diocletian, and also assumes that the value of the so-called silver coin was affected by its silver content, which would be true in its market valuation, even if the government thought otherwise, one can estimate the number of antoniniani to the current aureus and also to the pound of gold for each ruler.¹⁷ That these ratios are at least approximately correct may be inferred from the statement in Diocletian's Edict that a pound of gold was worth 50,000 denarii (= 25,000 antoniniani of the third century).¹⁸

¹⁷ See the last two columns of Table B Part 2.

¹⁸ *Edict Dioclet.* XXX 1a.

From a modern analogy, a possibility not elsewhere discussed may be suggested. Our own government maintains in theory at least a mint ratio of 1 : 16 (actually 1 : 15.998) which for many years has been far different from the ratio shown by the market price of the two metals. About the time of the first World War with gold at \$20 an ounce and silver at \$0.60 an ounce the market ratio was about 1 : 34. Since then gold has risen and silver has fallen, so the present market ratio is about 1 : 90. If this double ratio existed in the Roman Empire, it would help to explain the fall in the value of the subsidiary coinage when people lost faith in the solvency of their government.

There are several minor problems which should be mentioned, even though it is impossible to attempt any definite answers. In view of the very large percentage of alloy in the so-called silver coins during the thirty year period beginning with Valerian, it is reasonable to assume that gold coins became more and more the chief element in the monetary system. It is strange that the first indication of this is found in the fourth century, when for a long period the good silver coin (then called the *siliqua*) was apparently too limited in quantity to serve commercial needs adequately. However other instances of debased coinages have shown that badly debased coins can circulate above their real value until a time of panic, and that such periods of panic are short-lived.¹⁹

It would be interesting to know how the Roman

¹⁹ As in Central Europe after 1919.

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government put gold and silver coins into circulation. Did it ever permit private owners to bring gold and silver bullion to the mint for coinage? Did the operator of a mine leased from the government have to sell to the government at a fixed price, or did he have to depend on private buyers of gold and silver bullion as a market for his product? If we assume that there was no right given to private owners of gold and silver to ask coinage of it at the mint, the only way the government could put coins into circulation, unless it simply gave them away, was in payment of obligations (wages and purchases of supplies) over and above the amount of coins it had collected in taxes or as replacements for older worn coins. This immediately raises the question as to the nature of the bullion market. Large quantities of gold and silver always seem to have been available to the makers of gold and silver plate. It would be interesting to know how they obtained it.

Another point of interest is the degree of control exercised by the central government over the rates of exchange between its own coins, as well as between those coins and the numerous local subsidiary issues. The probability is that very strict control was exercised, but direct evidence is rare. Outside of Egypt, where the local coinage was successfully isolated, there is the statement by Epictetus that the "coinage of Caesar" must be accepted, presumably at its face value, whether the seller wants to or not.²⁰ A few years later, Hadrian laid down

²⁰ *Discourses* iii. 3.3.

regulations controlling the use of imperial and local coins for small purchases at Pergamum.²¹ Here, probably for local reasons, he seems to have limited the use of imperial denarii. Still later, Septimius Severus regulated exchange at Mylasa in an effort to enforce the legal relationship between imperial and local issues.²²

Something should be said concerning the tables that form a large part of this paper.

A.) Weights are given in grains troy to permit more easy classification, but in essential places the metric gram equivalent is also given. The tables are shown with gradations of one grain, both to permit more convenient checking of the inferences based on weights that are made here, and also to permit their possible use for other purposes.

B.) As will be readily appreciated, the chief difficulty in such a study as this is the lack of dependable information. Only one volume of Mattingly and Sydenham's "Roman Imperial Coinage" gives any weights; satisfactory catalogues of great museum collections are practically non-existent; auction catalogues vary in accuracy and for many important collections omit weights entirely. Articles in scientific journals are sometimes no better. Thus in the account of the gold hoard found at Italica, to mention but one example, weights are so inexact that they could not be incorporated in the tables used here.

²¹ Dittenberger, *OGIS.*, 484. See Broughton's translation, *Econ. Survey*, (ed. Frank), IV. 892 ff.

²² B.C.H., XVIII (1896), 523. See Broughton's translation, *op. cit.* pp. 896 f.

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Much of what is worthwhile in this monograph is due to the help and encouragement of others. In the first place, I am deeply indebted to Professor A. C. Johnson of Princeton, to the late E. T. Newell, President of the American Numismatic Society, and to the very efficient staff at that institution. To Dr. David Magie, to Dr. W. K. Prentice, both of Princeton, to Harold Mattingly, Esq., of the British Museum, I am indebted for suggestions and criticisms. None of these, however, are in any way responsible for errors or for opinions here expressed.

TABLE B
THE GOLD AUREUS^a

	Number of aurei	Point of concn.	Number at this point	Per Cent -1 to +1	Per Cent -2 to +2
Augustus					
	43/30	124	16	78.8	96.9
	III viri	123	17	42.5	65.5
	Others	121	260	71.3	88.5
	11/14	119	35	60.6	83.8
Tiberius	160	119	35	60.6	83.8
Caligula	68	119	28	77.9	92.4
Claudius	363	118	112	68.9	90.6
Nero	169	117	51	73.2	85.7
	64/68	112	58	53.4	67.5
Galba	69	112	11	60.9	78.1
	Spain	118	7	78.6	92.1
	Gaul				
Otho	58	112	12	50.0	81.0
Vitellius	83	112	18	55.4	67.5
Vespasian	666	112	113	56.3	74.2
Titus	88	111	17	45.4	77.3
Domitian	12	113 Average			
	81				
	81/84	118	12	52.8	71.7
	82/96	116	26	49.6	71.2

^a Coins in this table, as in the others here, have been arranged by weights (in grains). The "point of concentration" is the weight where most coins are found. In the first line the figure under Per Cent -1 to +1 shows the percentage of the 33 coins occurring in this group that weigh between 123 and 125 grains (inclusive); the next column the percentage between 122 and 126 grains. This is an excellent check on the accuracy of minting and also on the accuracy of the frequency table. The ratio of the gram to the grain is 1 : 15.43.

TABLE B—Continued

Weights are given in grains

Number of aurei	Point of concn.	Number at this point	Per Cent -1 to +1	Per Cent -2 to +2
64	115	12	51.6	76.6
24	113 Average			
468	111	102	54.5	78.4
578	111	135	54.0	75.4
758	111	240	61.1	80.6
578	111	222	77.5	95.3
79	112	25	81	90
43	111	15	83.7	93
17	103	7	64.7	82.3
523	112	87	52.6	76.7
58	112	12	44.8	65.5
21	100	4	38.1	57.1
83	111	22	50.6	69.9
39	98 Average			
27	110	4	66.7	74.1

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TABLE B—Continued
 THE GOLD AUREUS—Continued *

	under												over
Totals	31	31/40	41/50	51/60	61/70	71/80	81/90	91/100	101/105	105	105	105	105
105 Alexander Severus			5	1	2		5	61	26	5			
11 Maximinus				1		2	3	2	3				
2 Balbinus, etc.													
95 Gordian III			1	1	17	65	10						1
45 Philip			2	1	25	12	1	1					3
96 Decius		1		16	51	24	2	1					1
52 Trebonianus		1	3	13	10		13	11					1
53 Volusianus		2	7	7	5	4	13	15					
4 Aemilianus			2	1	1								
205 Valerian	13	70	71	24	16	6	4	1					
280 Gallienus, sole	62	21	24	35	49	42	20	18	5				4
16 Claudius II						7	8	1					
92 Aurelian			1	2	10	24	22	16	5				12
76 Tacitus					18	30	6	15	5				2
144 Probus	1	2	1			17	33	53	21				16
108 Carus			1	2	53	38	13	1					
150 Carinus				1	37	66	34	10	2				

* Because no frequency table properly shows the variation in weights from Alexander on, the coins have been shown in groups of 10 grains (about 5/8 of a gram).

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TABLE C
GOLD QUINARIUM
Weights in Grains

	50	51	52	53	54	55	56	57	58	59	60	61	62	63
48 Augustus														
48 Tiberius				2	1	1		1	4	8	18	10	3	1
6 Caligula								3	9	19	7	9		
1 Nero								1	1	2	1	1		
1 Vespasian														
1 Domitian							1							
3 Nerva					1			1	1					
9 Trajan	1		1	2		2	3							
25 Hadrian	1	1	2	4	5	6	3	1	1			1		
22 Pius	1			2	5	5	4	3	1		1			
6 Marcus				1	1	1		2		1				
4 Commodus			1		1	1		1						

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After Commodus all gold coins appear in the regular tables

TABLE D
AVERAGE WEIGHTS IN GRAINS OF SILVER COINS^a

		Denarius		Antoninianus		Syrian drachma		Caesarea drachma	
		No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
Augustus	43/30	100	58.0			92	56.2		
	III Viri	206	60.06						
	Other	65	57.93						
Tiberius		34	56.29					7	53.04
Caligula		13	56.91					8	53.9
Claudius		33	58.3					20	56.2
Nero	54/63	19	54.6					69	55.4
	64/68	278	50.46			264	56.2	4	54.2
Galba	Rome	36	50.46			64	55.2		
	Spain	28	51.84			64	56.5		
Otho		32	52.01			52	56.2		
Vitellius		81	51.27						
Vespasian		304	47.99			356	55.6	87	52.9
Titus		129	49.68			20	55.2		
Domitian	81/82	24	49			92	55.7	50	52.7
	83/96	248	51 p.c.						
Nerva		113	50.18			52	57.2	48	51.5

^a Note 3 applies here as well as to the gold coins. Under each heading there are shown where possible the number of coins and the average weight. In a few cases indicated by the letters "p.c." the weights have been distributed on a frequency table and the point of concentration rather than the average weight shown. The Egyptian tetradrachm has been purposely omitted as it requires special treatment. Other eastern tetradrachms have been reduced to drachms in order to show more clearly their relationship to the denarius. The weights used for Claudius have been taken from Homo, *Essai sur le règne de l'empereur Aurélien*.

22 GOLD AND SILVER STANDARDS

TABLE D—Continued

	Denarius		Antoninianus		Syrian drachma		Caesarea drachma	
	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
Trajan	70	49.6			52	56.2	41	51.2
	598	49 p.c.			664	54.2	217	52.1
Hadrian	786	50 p.c. (?)			40	51.2	84	48.2
Pius	1002	51 p.c.					33	44.3
Marcus	840	51 p.c. (?)			1	49.5	85	50
Commodus	335	44.89			11	45.63	34	37.89
Pertinax	13	48.14						
Didius	6	44.18						
Septimius Severus	257	48.39			143	50.4	72	47.7
Caracalla	32	49.2	32	77.30	84	50.8	14	44.5
Macrinus	36	49.17	1	79.3	64	51.4	6	50
Elagabalus	68	47.06	42	78.7	68	50.3		
	17	41.20						
Alexander Severus	91	47.60					2	38.19
Maximinus	41	48.38						
Balbinus, etc.	1	49.2	21	71.76				
Gordian III	5	51.2	1587	68.3	76	47.90	4	31.79

TABLE D--Continued

	Denarius		Antoninianus		Syrrian		Caesarea	
	No.	Wt.	No.	Wt.	No.	drachma	No.	drachma
Philip			1199	64.5	264	46.95		
Dedius			1954	62.0	232	47.19		
Trebonianus ^{ss}			{ 550	54.11	148	47.03	
Volusianus			{	36	45.41	
Aemilianus			43	53.5				
Valerian			1266	52.9				
Gallienus								
Claudius								
Rome			Homo	47.3				
Other			Homo	52.6				
Pre-reform			1151	53.8				
Reform			828	58.2				
			16	63.26				
Tactus			210	57.5				
Probus			24	57.86				
Carus			65	61.10				
Carinus								
Diocletian								
Pre-reform								
Reform			560	47.68				

• The average weight of the antoninianus includes coins of both emperors. The weights of the Syrian drachma are of each man separately.

24 GOLD AND SILVER STANDARDS

TABLE E
FINENESS OF SILVER COINS

	Denarius	Antoninianus	Caesarea	Syria	Alexandria
	No. %	No. %	No. %	No. %	No. %
Augustus					
Tiberius					— 16.0
Caligula					— 25.1
Claudius					3 16.4
Nero					
Galba	4 92.6				1 16.4
Otho	1 98.15				
Vitellius	2 83.7				
Vespasian	8 84.7			1 56.5	2 18.0
Titus	3 81.3				— 16.4
Domitian	9 91.2				
Nerva	3 90.7				— 17.0
Trajan	98/99 1 92.8				
	no date 11 83.8	1 62.5		1 57.2	1 17.0
Hadrian	15 84.1	1 64.1			5 15.7
Pius	16 80.0				3 16.2
Marcus Aurelius	13 75.3				
	161/171				— 16.0
	170/178				— 4.2
	178/180				— 8.0

IN THE ROMAN EMPIRE

25

TABLE E—Continued

	Denarius		Antoninianus		Caesarea		Syria		Alexandria	
	No.	%	No.	%	No.	%	No.	%	No.	%
Commodus	10	71.1							1	15.0
Pertinax	2	76								
Didius	1	81								
Septimius	13	57.3							2	10.2
Caracalla	4	60.2	3	58.9						
Macrinus										
Elagabalus	5	49.6	3	42.8					1	7.5
Alexander Severus	12	40.5							2	5.8
Maximinus	2	45.5							1	5.0
Balbinus, etc.	1	49.								
Gordian III			22	41.7					2	6.0
Philip			14	43.7					1	5.0
Decius			13	41.9					1	7.0
Trebonianus			4	35.2					1	7.5
Volusianus			5	60.9						
Aemilianus										

26 GOLD AND SILVER STANDARDS

TABLE E—Continued

	Denarius	Antoninianus	Caesarea	Syria	Alexandria
	No.	No.	No.	No.	No.
	%	%	%	%	%
Valerian		2 40.0			1 7.5
	poor	3 17.4			
Gallienus		4 50.9			1 4.0
	poor	14 6.4			
Claudius		7 3.46			37 2.4
	Rome	Homo 1.7/2.4			
Tarraco		Homo 2.5/2.7			
Siscia		Homo 2.75/3.0			
Antioch		Homo 8.75			
Aurelian		18 3.37			— 2.0
	Pre-reform	14 4.01			
	Reform	4 4.8			— 1.0
Tacitus		12 3.35			
Probus		1 4.0			
Carus		1 5.0			
Carinus		3 3.0			
Diocletian					1 1.81
	Pre-reform				
	Reform	1 94.3			

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CONVERSION OF GRAINS INTO GRAMS

Grs.	Gms.	Grs.	Gms.	Grs.	Gms.	Grs.	Gms.
10	0.648	41	2.656	72	4.665	103	6.674
11	0.712	42	2.72	73	4.729	104	6.739
12	0.777	43	2.785	74	4.794	105	6.804
13	0.842	44	2.85	75	4.859	106	6.868
14	0.907	45	2.915	76	4.924	107	6.933
15	0.972	46	2.98	77	4.989	108	6.998
16	1.036	47	3.045	78	5.054	109	7.063
17	1.101	48	3.11	79	5.119	110	7.128
18	1.166	49	3.175	80	5.184	111	7.192
19	1.231	50	3.24	81	5.248	112	7.257
20	1.296	51	3.304	82	5.312	113	7.322
21	1.36	52	3.368	83	5.378	114	7.387
22	1.425	53	3.434	84	5.442	115	7.452
23	1.49	54	3.498	85	5.508	116	7.516
24	1.555	55	3.564	86	5.572	117	7.581
25	1.62	56	3.628	87	5.637	118	7.646
26	1.684	57	3.693	88	5.702	119	7.711
27	1.749	58	3.758	89	5.767	120	7.776
28	1.814	59	3.823	90	5.832	121	7.84
29	1.879	60	3.888	91	5.896	122	7.905
30	1.944	61	3.952	92	5.961	123	7.97
31	2.008	62	4.017	93	6.026	124	8.035
32	2.073	63	4.082	94	6.091	125	8.10
33	2.138	64	4.146	95	6.156	126	8.164
34	2.202	65	4.211	96	6.22	127	8.229
35	2.267	66	4.276	97	6.285	128	8.294
36	2.332	67	4.341	98	6.35	129	8.359
37	2.397	68	4.406	99	6.415	130	8.424
38	2.462	69	4.471	100	6.48	140	9.072
39	2.527	70	4.536	101	6.544	150	9.72
40	2.592	71	4.60	102	6.609	160	10.368

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THE COINAGE OF THE INDIVIDUAL EMPERORS

AUGUSTUS

The aurei of Julius Caesar are said to have been issued on the basis of 40 to the pound, and the denarius at 84 to the pound. Since the Roman pound is usually equated with 327.45 grams or 5057 grains, the theoretical weight of Caesar's aureus is 8.186 grams (126.4 grains or 7.2 Roman scrupulae),¹ and of the denarius 3.89 grams (3.42 Roman scrupulae). Without making any allowance for the cost of minting, which may or may not have been deducted from the weight of the coins, the ratio of gold to silver was 1 : 11.91, assuming that the aureus was freely exchanged for twenty-five denarii in silver.²

From the death of Caesar to about 30 B.C. Octavian seems to have retained the Julian standard for his gold and silver issues. Thirty-three aurei from this period are remarkably uniform in weight; of these twenty-six, or 80%, fall within a range of 123 to 125 grains or within 2% of the theoretical standard.³ From the weights of the aureus and denarius of this period, a ratio between gold and silver of 1 : 11.7 is found.

¹ With the Roman pound at 327.45 grams or 5057 grains.

² This is the ratio in de Ruggiero, *Dizion.*, ii. 1633.

³ These decreases from the theoretical weights may represent the cost of minting: see Mickwitz, *Systeme des röm. Silbergeldes im IV. Jhdt.*, 57.

Augustus is said to have issued lighter aurei after 30 B.C. on the basis of 42 to the Roman pound.⁴ If the denarius was unchanged at 84 to the pound, the ratio of gold to silver becomes 1 : 12.5. However, the available evidence does not support the theory that the new aureus was issued at this rate, which would imply a norm of 120.4 grains (7.79 grams). Omitting the issues struck by the *tresviri* between 19 and 15 B.C. and the Augustan aurei struck after A.D. 11, the weights of 749 aurei which are ascertainable from published descriptions show a definite peak or norm at 121 grains (7.85 grams) with 71% of the entire number falling between 120 and 122 grains and with 88% falling between 119 and 123 grains. Since the theoretical weight of aurei on the basis of 42 to the pound is 120.4 grains, it is difficult to believe that Augustus would have consistently issued gold somewhat overweight with consequent loss to the government. If, however, these aurei were issued at the rate of 41 to the pound, each should weigh 123.3 grains. Therefore the aurei of this period have a point of concentration slightly less than 2% below the theoretical weight,⁵ and this would seem more reasonable from the practical standpoint. On this basis the theoretical ratio of gold to silver would be 1 : 12.2. If the actual coins are considered, with the weight of the aureus taken as 121 grains, and the weight of the denarius as 57.9 grains (based on the ascertain-

⁴ Based on Pliny, *Nat. Hist.*, xxxiii. 3, 13.

⁵ Ondrouch (*Der röm. Denarfund von Vyskovce*, 9) says that from B.C. 9 to A.D. 60 the basis was forty-one to the pound.

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able weights of sixty-five examples),⁶ the ratio of gold to silver is found to be 1 : 11.97.⁷

The point of concentration at 121 grains found from the table of frequencies may be compared with the average weights given by Mattingly:⁸

Number of coins	Mint	Grams	Grains
23	Rome	7.95	122.67
28	Spain	7.83	120.85
44	Lyons	7.84	121.02
20	Eastern	7.78	120.14

The average weight of 752 aurei from all mints is given by Bahrfeldt⁹ as 7.80 grams or 120.3 grains. It will be noticed that neither of these scholars

⁶ BMC., i, lii. Edwards (Yale Collection, 85) gives 3.3 and 3.62 grams; *Berl. Münzbl.* (1914, 120) gives 3.30, 3.30, 2.45, 3.0, 3.75; *Num. Zeit.* (1914, 228) gives 3.78, 3.59; Naville Sale 10 gives 4.0, 3.55, 3.77; Helbing Sale of Mar. 12, 1927, gives 3.9, 3.6, 3.9, 3.6, 3.85, 3.7, 3.55, 3.8, 3.95, 3.6, 3.9, 3.9, 3.6, 3.2, 3.85, 3.4; Helbing Sale of Oct. 24, 1927, gives 3.75, 3.6, 3.6, 3.75, 3.85, 3.5, 3.90; Princeton University has of the III Viri: 3.65, 4.08, 3.68, 3.40, 3.10, 3.63; of Spanish mints 3.79, 3.63, 3.54, 3.74, 3.86, 3.83; of Roman mint 3.78, 3.63; of Lyons 3.78, 3.83, 3.76, 3.78, 3.91, 3.80, 3.71, 3.79, 3.66; of Eastern 3.67, 3.60, 3.66, 3.65, 3.54, 3.66, 3.75, 3.76; Naville Sale 17 gives 4.00, 3.69, 3.87, 3.84, 3.68, 3.88, 3.52; *Bonner Jahrb.* (111/112, 419) gives 3.63, 3.65, 3.56, 3.54; *Notizie degli Scavi* (1935, 366) gives 4 averaging 3.50; *Bull. Soc. Num. Romane* (1919, 127) gives 3.80, 3.60, 3.95, 3.90, 3.75, 3.60 for period B.C. 44 to 27; 3.45, 3.70, 3.80 for moneyers; 3.60, 3.75, 3.95, 3.75, 3.70, 3.75, 3.85, 3.75, 3.90, 3.80, 3.70, 3.75 for later; *Viestnika Hrv. Arheol. Društva* (1896, 22) gives 3.75, 3.72, 3.70, 3.76, 3.68; *Museo Ital. di Antich. Class.* (ii, 290) gives 3.50, 3.62.

⁷ Using Bahrfeldt's average weight of the aureus, the ratio is almost 1 : 12.2.

⁸ BMC. i, li. Hultsch (*Griechische und römische Metrologie*, 306) gives 7.90 to 7.78 grams.

⁹ *Die röm. Goldmünzenprägung während der Republik und unter Augustus*, 185.

makes any attempt to divide the coins chronologically.

Individual types are sometimes found in sufficient numbers to establish an approximate norm.¹⁰ For example, Cohen 136 dated 15/12 B.C. and Cohen 42 dated A.D. 2/11 show the following results:

Weight in grains	Cohen 136	Cohen 42
117		1
118		3
119	5	4
120	5	19
121	15	36
122	14	7
123	2	6
124	1	3

It will be noticed that there is a tendency toward lighter weights in the later group.

The aurei issued by the *tresviri* at Rome between 19 and 15 B.C. seem to be based on a weight of 123 grains. The minting was somewhat careless and the weights show a rather wide spread. Only 65.5% of a total of 87 coins fall within a range of 121 to 125 grains. This carelessness of the moneyers may have been one of the reasons which led Augustus to do away with their rights over the coinage. Using the average weight of 206 denarii struck by the *tresviri*, the ratio of gold to silver is 1 : 12.2, but if the point of concentration in the following table is used, the ratio is 1 : 12.4.

¹⁰ Frank (*An Economic Survey of Ancient Rome*, v, 21) assumes without justification that the number of coins in each type was about equal.

38 GOLD AND SILVER STANDARDS

The denarii struck by the *tresviri*:¹¹

Weight in grains	Number
48	1
49	2
50	3
51	6
52	4
53	7
54	7
55	9
56	18
57	22
58	18
59	29
60	27
61	31
62	12
63	6
64	2
65	1
66	1
<hr/>	
Total	206

After A.D. 11 the Augustan aureus is definitely lighter in weight, and it may be that it was now issued on a basis of 42 to the pound, or at a theoretical weight of 120.4 grains. The point of concentration seems to be 119 grains or about 1% below the theoretical weight. Of coins whose weight is ascertainable, 90% fall within a range of 117 to 121 grains.

¹¹ Chiefly from BMC. and E. J. Haeberlin Coll. (Cahn-Hess Sale, July 1933).

Both gold and silver issues of Augustus were of exceptional purity, the intention apparently being to issue both as near pure metal as was possible.

The history of the mints under Augustus may be summarized as follows:

31–23 B.C. Gold and silver coined at a travelling mint; about 29 B.C. at Ephesus and Pergamum.

23 B.C. Silver issued at Emerita.

19–18 B.C. Gold and silver issued at Ephesus.

19 B.C. Gold and silver coinage resumed at Rome.

15 B.C. The mint at Lyons opened and the coinage of gold and silver ceased at Rome.

14 B.C. The Roman mint for gold and silver reopened.

12 B.C. The Roman mint again closed and Lyons became the sole source for gold and silver.

Grenier says that gold and silver issues almost cease after 10 B.C.,¹² while Frank¹³ states that the issue of gold and silver from 9 B.C. to A.D. 32 amounted only to 5% of the total amount coined between 30 and 10 B.C. Both statements are based on the number of different types issued at various periods and disregard entirely the fact that one type (as Tiberius 15) might have been issued over a period of many years and others issued for some particular short-lived purpose. Likewise there seems no confirmation for the statement by Warmington that "at first the Romans sent out (to India) under

¹² *Econ. Survey*, ed. Frank, iii, 510.

¹³ *American Journal of Philology*, 1935, 336.

Augustus very fine pure gold and silver coins, but at the same time tried the effect of bad coins."¹⁴

When Octavian laid down his exceptional powers in 27 B.C. the military coinage of the East was given up, and requirements were met by provincial issues of silver and bronze which were controlled by the princeps. It seems that official rates of exchange between the local issues and the Roman coinage were fixed by the central government, while the right to make such exchange seems to have been leased to local banks.

Twenty-three tetradrachms from Syria have an average weight of 14.57 grams.¹⁵ This is equivalent to 3.64 grams for the drachma or about 4% below the average weight of the denarius. Weights of the silver coins issued by contemporary Persian rulers afford an interesting comparison with the eastern Roman issues and with the denarius. The average weight of 141 tetradrachms and of 138 drachms struck by Phraates IV (B.C. 37/2) is 13.21 and 3.61 grams respectively.¹⁶ Under Phraates V (B.C. 2/A.D. 4) 28 tetradrachms and 22 drachms average 11.77 and 3.64 grams respectively while under Vonones I (A.D. 8/12) 11 tetradrachms and 22 drachms average 11.51 and 3.68 grams. Five silver obols struck by Phraates IV average 0.69 grams. It will be noticed that the Persians, even with the change in government in the third century,

¹⁴ *Commerce between Roman Empire and India*, 292.

¹⁵ Wruck, *Die Syrische Provinzialprägung*. The high is 15.40 grams, the low 13.55 grams. Egger Sale 46 gives 14.68.

¹⁶ *Sammlung Petrowicz*; BMC.; Naville Sale, 12; Prokesch-Osten, *Monnaies des rois parthes*; Markoff, *Monnaies des rois parthes*.

maintained the weights of their silver drachmae with practically no change.

Of the literary references to gold and silver money, one, often quoted, deserves particular mention. Dio lv. 12, supposedly written in A.D. 229, is commonly used as evidence that the aureus was worth twenty-five drachmae or denarii. This section of Dio, which is devoted to the reign of Augustus, is preserved only in late epitomes made by Zonaras and by Xiphilinus. Both say that among the Romans twenty-five drachmae are worth one gold nomisma (= aureus), and both use the present tense of the verb. Zonaras, however, does not ascribe that valuation to Dio but adds a phrase not in Xiphilinus: "among the Greeks, Dio says that twenty drachmae are exchangeable for a gold nomisma." One may ask why Dio is made to say that among the Greeks the relationship is such and such when he was a Greek and was writing in Greek for people who knew what the relationship was. If the clause was actually written by Dio to explain monetary terms and relationships of the time of Augustus (over 200 years before his own time), why is it given in the present tense, particularly since there is no point to the statement if the relationship was still true when the sentence was written? On the whole it seems reasonable to assume that the equation of one aureus with twenty-five drachmae was inserted by a copyist at a time when the drachma had disappeared from the currency and was a word of antiquarian interest only. Whether this suggestion is accepted or not, there is sufficient

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TABLE F
AUGUSTUS AUREI

Grains	Rome 43/30	East 31/29	East 29/27	East 27/20	East 20/18	Spain 19/15	iii viri 19/16	Lyons 15/12	Lyons 11/9	Lyons 8/2	Lyons 2/11	Lyons 11/14
112				1								1
113		1	1			1						1
114												
115		1	1	1		1						1
116		1	1	1								3
117		2	2	1	2	2		2	1		1	6
118		2	6	1	3	12		11	2	3	6	13
119		7	8		16	17		7	14	12	10	10
120		17	9	22	12	35		12	19	18	23	10
121	1	13	11	19	21	48		10	40	35	31	4
122	4	6	3	9	6	16		7	9	6	10	
123	6	5	7	4	4	5		17	1		6	1
124	16	1	2		5			13			3	
125	4		1					10				
126	2							5				
127								3				

doubt about the passage to prevent its proper use as evidence for monetary relationships either in the time of Augustus or in the time of Dio.

TIBERIUS

The gold coins of Tiberius show a decrease in weights as compared with those of Augustus, but the distribution is somewhat different. More coins of Tiberius than of Augustus are found above the point of concentration. This may be shown:

AUGUSTUS		TIBERIUS	
Weight in grains	Number	Weight in grains	Number
120	216	118	33
121	275	119	35
122	89	120	29
123	59	121	20

The results shown by tabulating the weights of Cohen type 15, the most common of the gold coins of Tiberius, do not exactly agree with those shown when all the gold coins of Tiberius are considered together:

Weight in grains	Number of Cohen 15
115	3
116	5
117	16
118	18
119	24
120	26
121	11
122	2

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It should be pointed out that this particular coin seems to have been struck over a period of about twenty years.

Mattingly¹⁷ gives the average weight of twenty-nine aurei as 119.69 grains (7.76 grams), while Bahrfeldt¹⁸ gives the average of forty-two as 7.72 grams.

However if 119 grains is considered the point of concentration for all the gold issued by Tiberius, it is found that nearly 84% of the coins fall within a range of 117 to 121 grains. Even though more of the coins than seems normal weigh over 119 grains, this figure of 84% represents good coinage.

The weight of 119 grains indicates a decrease of about 3% below the theoretical weight on the basis of 41 to the pound, or about 1% below the theoretical weight of forty-two to the pound. The latter standard, therefore, seems to be the basis for the coinage of Tiberius.

The average weight of thirty-four denarii indicates a decrease of about 6½% below the theoretical weight. Using the weight of 119 grains for the aureus and the average weight of the denarius (56.3 grains, 3.67 grams),¹⁹ the ratio of gold to

¹⁷ BMC., i, li.

¹⁸ Bahrfeldt, *Die röm. Goldmünzenprägung*, 185; Hultsch (*Metrol.*, 308) says 7.78 to 7.74 grams.

¹⁹ BMC., i, lii for 16 coins averaging 3.76 grams; Edwards (Yale Coll.) gives 3.84, 3.26, 3.11, 3.7 grams; *Berl. Münzbl.* (1914, 120) gives 2.85, 2.95, 3.50, 3.55, 3.66; *Num. Zeit.* (1914, 228) gives 3.82, 3.80, 3.67; Cardoso (Cat. Buenos Aires, 96) gives 3.50; Naville Sale 17 gives 3.77, 3.75; Princeton Univ. has 3.86; Amer. Num. Soc. has 3.74, 3.65; Bonner Jahrb. (111/112, 419) gives 3.64, 3.59, 3.54.

silver is 1 : 11.82. Wruck²⁰ gives the average weight of a few tetradrachms from Tarsus as 15.05 grams, while Sydenham²¹ gives the weights of seven drachmae from Caesarea as 56, 55, 54, 53.4, 53, 51.4 and 48.5 grains or an average of 3.44 grams. The coins from Caesarea are therefore about 10% lighter than those from Tarsus. In Persia 56 tetradrachms and 18 drachms issued by Artabanus III (A.D. 10/40) average 12.30 and 3.63 grams respectively.²²

Problems connected with the coinage apparently were as disturbing to Tiberius as to Augustus. Like Augustus, Tiberius divided the right of coinage with the Senate, keeping to himself the sole right to mint gold and silver, but giving the Senate sole control, in theory at least, over the subsidiary coinage. Like Augustus again, Tiberius had his imperial mint for the coinage of gold and silver at Lyons,²³ and this was kept in operation all through his reign.²⁴

Augustus had made an experiment in local issues of base metals in the West; but disturbed, it is claimed, by the nationalistic movements in Gaul and Spain during his own reign, Tiberius attempted

²⁰ Wruck (*Die syrische Provinzialprägung*) calls them Syrian; Egger Sale 46, gives 14.68.

²¹ Sydenham, *Coinage of Caesarea*.

²² *Sammlung Petrowicz*; Naville Sale 12; Cahn Sale 71; BMC.; Markoff, *op. cit.*; Prokesch-Osten, *op. cit.*

²³ Mattingly, *Roman Coins*, 112.

²⁴ Sydenham (*Coinage of Nero*, 29) believes that Lyons also became a senatorial mint in A.D. 54, an idea not accepted by Mattingly.

to reverse that policy,²⁵ forcing the western provinces, except Spain perhaps, to depend on subsidiary coins issued by the imperial and senatorial mints. By this action all commercial activity seems to have been hampered because of the insufficiency of the supply of small coins. Some attempts to correct this situation resulted in a few issues of local unofficial coins.²⁶

In the East conditions were different. A mint at Caesarea in Cappadocia began issuing silver, mostly drachmae, on the Syrian system. This mint, which was imperial, continued in operation until the time of Gordian III.²⁷ At Alexandria, Tiberius added to the coinage by issuing a new silver tetradrachm containing about 16% of silver.²⁸ It is proposed to discuss this Egyptian coinage in a separate monograph.

Some of the contemporary references to the aureus and denarius are of interest. Germanicus when in the East apparently ordered that the customs dues at Palmyra should be levied in denarii and that when the charge was smaller than a denarius, it should be levied in Roman asses.²⁹

²⁵ Mattingly, *Roman Coins*, 195; Momigliano, *Claudius*, 40; Julian (*Hist. de la Gaule*, iv, 286) says the reason was a belief that a uniform coinage would help commerce. Van Nostrand (*Econ. Survey*, iii, 209) says that twenty-seven Spanish towns coined copper under Tiberius, six more than under Augustus.

²⁶ Sutherland, *Romano-British Imitations of Bronze Coins of Claudius I* (Numismatic Notes and Monographs No. 65).

²⁷ Mattingly, *Roman Coins*, 196.

²⁸ *Amer. Jour. Archaeology*, xxxviii, 49. Frank (*Econ. Hist.*, 399) says it contained 25% of silver.

²⁹ IGRR., iii. 1056.

This provision remained in force for over a century. Celsus³⁰ says that there were seven denarii in an ounce, which makes eighty-four to the pound. Tacitus³¹ tells of soldiers asking a wage of one denarius a day, a demand that was refused. Matthew³² speaks of a jar of nard worth 300 denarii. Suetonius³³ mentions aurei in connection with a story about Tiberius, while Strabo says³⁴ that both gold and silver were coined in Lyons.

As a matter of interest, all the references to money that occur in the New Testament are gathered together here:

Talent: Matthew xviii: 23f; xxv: 14f.

Piece of gold (χρυσός): Matt. x: 9; James v: 3.

Piece of gold (χρυσόν): Acts iii: 6; xx: 33; I Peter i: 18.

Stater: Matt. xvii: 27.

Two-drachma piece (as a tax): Matt. xvii: 24.

Piece of silver (ἀργύριον): Matt. xxvi: 15; xxvii: 3, 5; xxv: 18; xxviii: 12; Mark xiv: 11; Luke ix: 3; xix: 15; xxii: 5; Acts vii: 16; viii: 20; xix: 20.

Denarius: Matt. xxii: 19; Mark xii: 15; vi: 37; xiv: 5; Luke xx: 24; vii: 41; x: 35; John vi: 7; xii: 5; Revel. vi: 6.

Drachma: Luke xv: 8.

Assarion: Matt. x: 29; Luke xii: 6.

³⁰ Celsus, v, 17, 1.

³¹ Tacitus, Ann., i, 17; 26; Matt. (xx, 2) indicates a denarius was a day's pay.

³² Matt., xiv, 5.

³³ Suet., Claud., 5.

³⁴ Strabo, iv, 3, 2, (p. 192), dated A.D. 18.

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Lepton: Mark xii: 42, which seems to say that two lepta equal one quadrans; Luke xii: 59; xxi: 2.

Quadrans: Math. v: 26. This relates the same incident told in Luke xii: 59 which seems to give the lepton and the quadrans equal value.

It will be noticed that the terms used for the silver and copper coinage are a mixture of Greek and Latin words. Seemingly imperial coins circulated freely side by side with the strictly local coinages.

TABLE G

TIBERIUS AUREI

Grains	14/15	14/23	15/16	16/37	26/37
109				1	
110					
111				1	
112					1
113		1		1	
114					
115	1	2		3	
116	1		2	5	
117		2	1	14	
118	2	7	5	19	
119		3	4	27	1
120	1	1	3	24	
121		5	1	13	1
122		2	1	3	
123				1	

CALIGULA

The sixty-eight aurei of this reign show a point of concentration at 119 grains, exactly the same as under Tiberius. But the quality of Caligula's coinage, if one may judge from the comparatively few coins, shows an improvement over that of Tiberius. More than 92% of the coins of Caligula

fall within a range of 117 to 121 grains, as compared with 84% of the coins of Tiberius.

Mattingly gives an average weight for the aurei of Caligula of 119.23 grains (7.72 grams)³⁵, while Bahrfeldt gives an average of 7.70 grams.³⁶ The average weight of the denarius shows a slight increase over that of Tiberius, being 56.91 grains

TABLE H
CALIGULA AUREI

Grains	Lyons 37/38	Rome 37/38	39/40
110			
111			
112	1		
113			
114			
115	1		
116	1		
117	4	2	1
118	5	9	4
119	12	8	8
120	3	2	2
121	1	1	1
122			1
123			
124	1		

(3.69 grams).³⁷ As indicated by the coins, the ratio of gold to silver is 1 : 11.94.

Wruck gives 14.65 grams as the average weight of the Syrian tetradrachm, while Sydenham gives weights of 59, 55.5, 53.2, 50.9, 50.3, 47.5 grains for

³⁵ BMC., i, li based on 29 coins.

³⁶ *Die röm. Goldmünzenprägung*, 185, based on 29 coins.

³⁷ BMC. (i, lii) based on 11 coins gives 57.77 grains (3.72 grams). Cardoso (*op. cit.*, 101) gives one at 2.2; Naville Sale 17 gives one at 3.53; Amer. Num. Soc. has 3.54; *Num. Zeit.* (1914, 228) gives 3.68.

the drachmas and 113 for the didrachm of Caesarea. The Caesarea drachm, therefore, averages 3.49 grams, the Syrian drachm 3.66 grams, the latter being almost exactly the weight of the denarius.

In his handling of the coinage Caligula reversed some of the policies followed by Tiberius.³⁸ Soon after his accession in A.D. 37 he closed the mint at Lyons and reopened the imperial mint at Rome.

CLAUDIUS

Included here with the coins of Claudius are those of Nero Drusus, of Agrippina (in part), and of Nero as Caesar. The point of concentration is a little lower than in the two preceding reigns, being found at 118 grains (7.65 grams). About 91% of the total of 363 coins are found within a range of 116 to 120 grains, representing an excellent quality of workmanship. Bahrfeldt suggests that there was a change in weights about A.D. 45,³⁹ but the present tables give no clear indication of such a change.

Mattingly gives the average weight of 104 aurei as 117.82 grains (7.63 grams), while Bahrfeldt gives an average of 7.71 grams for eighty-six coins issued between A.D. 41 and 45, and of 7.67 grams for fifty-six coins issued between A.D. 46 and 54.⁴⁰ However, a difference so small, less than 1%, is inconclusive, for it is less than a normal variation in striking to the same standard.

³⁸ Mattingly, *Roman Coins*, 113; Burns, *Money and Monetary Policy*, 101.

³⁹ Bahrfeldt, *op. cit.*, 185.

⁴⁰ Hultsch (*Metrol.*, 306) says 7.70 to 7.68 grams.

According to Mattingly twenty-nine denarii average 57.77 grains (3.75 grams),⁴¹ but weights from other sources slightly increase this average. Elmer believes that about A.D. 51,⁴² there was a decrease in the theoretical weight of the denarius from the Augustan standard of one eighty-fourth of a pound to one-ninetieth of a pound but the evidence for this is not convincing. Wruck gives 13.65 grams as the average weight of the Syrian tetradrachm, while Sydenham gives the weights of ten didrachmae of Caesarea, ranging from 117.5 to 103.3 grains with an average of 113.1 grains (7.33 grams). The Syrian drachma was equal therefore to 3.41 grams, the Caesarea drachma to 3.67 grams.

In Persia⁴³ 71 tetradrachms and 52 drachmae struck by Gotarzes (A.D. 40/51) average 12.72 and 3.67 grams respectively, while 66 tetradrachms and 12 drachmae struck by Vardanes I (A.D. 41/45) average 12.51 and 3.58 grams. Eight tetradrachms struck by Vonones II (A.D. 52/55) average 13.86 grams, while five drachmae struck by Meherdates (A.D. 49/50) average 3.59 grams.

On the basis of 118 grains for the aureus and 58.3 grains for the denarius, the ratio of gold to silver is 1 : 12.33.

It has been said⁴⁴ that four-fifths of the coins issued by Claudius were debased, but for this

⁴¹ *Berl. Münzbl.* (1914, 120) gives 3.55, 3.75; Naville Sale 17 gives 3.65, 3.47; Amer. Num. Soc. has 3.76.

⁴² Elmer, *Verszeichnis*.

⁴³ *Sammlung Petrowics*; Naville Sale 12: BMC.; Prokech-Osten, *op. cit.*

⁴⁴ Burns, *op. cit.*, 167.

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statement there seems to be no satisfactory evidence. A contemporary writer, Scribonius Largus,⁴⁶ says there were eighty-four denarii in the pound.

In parts of the west, at least, a shortage of subsidiary coins led to the appearance of large numbers of local imitations. In Britain the condition lasted, it is said, until the time of Trajan,⁴⁷ and so great is the number of these local imitations that it seems their manufacture must have been tolerated, if not encouraged, by the central government. Apparently the same condition was true in Germany, for it is said that of the contemporary coins at Hofheim about 20% are imitations.⁴⁸

TABLE J
CLAUDIUS AUREI

Grains	41/2	41/45	43/4	44/5	46/7	49/50	50/54	51/2	51/54	No Date
113									1	
114		1			2				1	1
115	2	3		1	2		1		6	
116	1	3	2		2	1	2		7	1
117	3	11	1	4	6	2	15	1	9	3
118	21	24	1	2	17	6	16	4	20	1
119	15	16	3	5	18	8	7	3	6	2
120	9	16	3	7	9	4	1	2	4	5
121	2	2	1	1	2	1				2
122					1	1				
123										
124										
125										
126										

⁴⁶ Scribonius Largus, p. 6, 16 (ed. Helmreich).

⁴⁷ *Econ. Survey*, iii, 62; Sutherland, *Romano-British Imitations*.

⁴⁸ Sutherland, *op. cit.*, p. 3.

NERO

From a monetary point of view, the reign of Nero is divided into two parts, the dividing point being the year A.D. 63/64, when the currency standards were revised.

FIRST PERIOD. The point of concentration of the 108 aurei from this period seems to be at 117 grains, indicating a slight decrease from the coins of Claudius. The quality of the coinage is indicated by the fact that 85.7% of the coins fall within a range of 115 to 119 grains. Mattingly gives the average weight of forty aurei as 117.93 grains (7.64 grams), while Bahrfeldt gives 7.639 grams as the average of seventy-four coins.⁴⁹ Nineteen denarii are said to average 54.6 grains (3.54 grams).⁵⁰ Wruck gives 14.53 grams as the average of sixty-six Syrian tetradrachms⁵¹ with a high of 15.54 and a low of 12.41 grams. Sydenham gives five tetradrachms of Caesarea with an average of 224 grains, nineteen didrachmae with an average of 111.8 grains and eleven drachmae with an average of 52.3 grains.⁵² The Syrian drachma averaged, therefore, 3.64 grams, the Caesarea drachma 3.59 grams.

In Persia 73 tetradrachms and 27 drachmae

⁴⁹ It is unfortunate that the coins from Italica in *Num. Zeit.*, 1902 cannot be used in the present tabulation, for the weights given are only approximations.

⁵⁰ Montelhet (*Musée Crozatier*, ii, 48) gives one dated A.D. 51 at 3.18; Naville Sale 2 gives 3.54, 3.50, 3.37, 3.26; Naville Sale 17 gives 3.56.

⁵¹ Egger Sale 46 gives 14.21, 15.25; *Num. Chron.* (1931, 160) gives 216.6, 225.4, 222.4 grains.

⁵² In addition, Naville Sale 17 gives 7.22 grams.

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issued by Volagases I (A.D. 51/77) average 11.89 and 3.53 grams respectively, while 9 tetradrachms and 7 drachmae issued by Artabanus IV (A.D. 59/67) average 11.84 and 3.49 grams.⁵³

Using the actual weights of the aureus and of the denarius, we find a ratio between gold and silver of 1 : 11.66.

It has been suggested⁵⁴ that all gold and silver minted between A.D. 54 and 63 was issued by the senate, but this idea has not found acceptance.⁵⁵

SECOND PERIOD, A.D. 64 to 68. Apparently early in A.D. 64 Nero put into effect his reform of the currency.⁵⁶ The new gold aureus was issued on the basis of forty-five to the pound, equivalent to 112.4 grains, or 7.28 grams, or 6.4 Roman scrupulae,⁵⁷ while the denarius was issued on the basis of 96 to the pound, equivalent to 52.7 grains, or 3.41 grams, or 3 Roman scrupulae. Apparently the percentage of alloy was somewhat increased,⁵⁸ if indeed this is

⁵³ *Sammlung Petrowicz*; Naville Sale 12; BMC.; Prokesch-Osten *op. cit.*; Markoff *op. cit.*

⁵⁴ *Num. Chron.*, 1919, 121.

⁵⁵ *Jour. Roman Studies*, vii, 59ff.

⁵⁶ Pliny, *Hist. Nat.*, xxxiii, 3, 13. Pliny says the weights had been gradually reduced since the time of Caesar. Frank (*Econ. Survey*, v, 35) has confused the aureus and the denarius and so has made utter confusion of this reform.

⁵⁷ BMC., i, xlv, apparently has an error in weights.

⁵⁸ Hammer (*Die Feinheit*, 97) gives two coins with 94.3 of silver and one with 91%. Mattingly (*Roman Coins*, 124) says the alloy was about 10%. Mickwitz (*Geld*, 20) emphasizes the cutting of weight as against the cutting of quality, the latter being the distinguishing characteristic of Trajan's reform. Ondrouch (*Vyskovce*, 11), gives a coin with 86.7 of silver and another with 91.6% but no dates. One Alexandrian tetradrachm is given with 15.5% of silver by Hammer.

not the first time any appreciable amount of alloy is found.

The point of concentration in the weights of 268 aurei belonging to this period is 112 grains (7.27 grams), a decrease of $4\frac{1}{2}\%$ from the pre-reformation. The quality of the coinage shows an even greater decrease, for only $67\frac{1}{2}\%$ of the total coins fall within a range of 110 to 114 grains. The secondary peak found at 108 grains indicates either a sudden carelessness in minting, which is difficult to accept, or the mingling of two standards. There is no other evidence for a second standard in these four years; and it is unfortunate that a more exact dating of the numerous coins of this period cannot be made so that any pronounced change would become evident.

Mattingly gives the average weight of 37 coins as 112.8 grains (7.31 grams), while Bahrfeldt gives an average of eighty-two coins as 7.24 grams. The average weight of twenty-six denarii is given as 49.09 grains (3.18 grams) by Mattingly⁵⁹ while Mickwitz⁶⁰ gives the average weight of 278 denarii as 3.273 grams. Wruck gives the average weight of sixteen Syrian tetradrachms as 14.40 grams, 1% less than the tetradrachm of the pre-reform period. Sydenham gives one Caesarea drachma weighing 54 grains or 3.5 grams.⁶¹

⁵⁹ Edwards (Yale Coll.) gives 3.03, 3.19, 3.31; *Berl. Münzbl.*, (1914, 120) gives one at 3.30; *Num. Zeit.* (1914, 228) gives one at 3.08; Cardoso (*op. cit.*, 107) gives one at 3.5; Ondrouch (*Vyskovce*, 12) gives 3.14, 3.14, 3.23, 3.30; Naville Sale 2 gives 3.53, 3.52; Princeton Univ. has 3.52; Amer. Num. Soc. has 3.39; *Fundber. Schwaben* (1913, 86) gives two averaging 3.03.

⁶⁰ *Systeme*, 42.

⁶¹ Ratto Sale of Apr. 4, 1927, gives 7.62 and 3.13 grams.

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Using the actual weights of the aureus and of the denarius, the ratio of gold to silver appears as 1 : 11.26⁶² which is to be compared with the theoretical ratio of 1 : 11.72.

The reason for this reform has been the object of much discussion.⁶³ According to some⁶⁴ it was actuated not by financial stress, but as part of a carefully-thought-out plan to unify the standards of coinage throughout the Empire, the new gold and silver weights being closely connected with the Eastern coinages (Cf. Table D). Others⁶⁵ emphasize the effort to adjust the coinage to changed market values of gold and silver, or as an attempt⁶⁶ to improve trade relations between the Empire and the Far East by reducing the bullion content of the coins chiefly used for that purpose. All of these ideas have been subjected to serious criticism, and as a matter of fact there seem to be at least two simpler reasons. Perhaps the alleged debasement of the silver was an effort to prevent its export out of the Empire by reducing its value as metal, and in this way to help insure an adequate supply of coinage at home.⁶⁷ Perhaps it was only an attempt

⁶² *Rev. Num.*, 1898, 663; 1899, 18. Burns (*op. cit.*, 412) gives the ratio as 1 : 10.6 as does Despau (Les devaluations monétaires dans l'Histoire, 116); Frank, (*Econ. Survey*, v, 91) repeats Mattingly's statement that the real ratio was 1 : 13.

⁶³ Mickwitz (*Geld*, 19) says it is unknown. He does not agree with Mattingly's idea about foreign trade.

⁶⁴ Sydenham, *Coinage of Nero*, 16; *Rev. Num.*, 1898, 659; Mattingly emphatically disagrees.

⁶⁵ Mattingly, *Roman Coins*, 124.

⁶⁶ Mattingly, *loc. cit.*; Burns, *op. cit.*, 412.

⁶⁷ Compagnotte, *Amer. Jour. Numismatics*, xlvii, 131, but Compagnotte seems wrong in his ratio of 1 : 9.

to improve the wearing qualities of the coins. Even our modern "sterling" has $7\frac{1}{2}\%$ of alloy, while our modern "coin" silver has 10% of alloy. Whether this change put the coinage on a single gold standard is, unfortunately, a question that cannot be definitely answered. Bimetallism in coinage involves two elements, free coinage and full legal tender, for both metals. While a statement by Epictetus, to be quoted later, implies the second element, we have not the slightest evidence that the government ever permitted private citizens to ask coinage of their gold or silver bullion. However, the maintenance of a pure gold coin circulating apparently at a fixed relation with a silver coin whose silver content was steadily decreased, implies that the silver was a purely fiduciary coin, maintaining its market value because of general faith in the political and financial stability of the government. It will be seen that the first evidence of serious distrust of the subsidiary coinage comes in the middle of the third century, when, under Gallienus, large parts of the empire were temporarily lost and pessimism about the future must have been general.⁶⁸

Mickwitz calls attention to the fact that finds in Germany, whose use of Roman silver was great, show that the new Neronian coins were kept in the Empire, and that the earlier heavier and purer pieces were sent out where they would buy more.

⁶⁸ Rome never had a trimetallic system for copper always becomes a token coinage when both gold and silver enter the monetary system. This country tried unsuccessfully in 1853 to make the 3-cent piece a real rather than a token coin.

Perhaps the Germans simply refused the new coins. If this is so it would indicate that in the Empire both the old and the new denarii were expected to circulate on a parity and by count, not by weight. Mattingly⁶⁹ suggests that Nero may have called in the old coinage. However Table Q, analyzing coin hoards in connection with Trajan's reform of the currency, gives absolutely no indication of any such effort, and one is impelled to the belief that the government by fiat decreed that the old and the new denarii should circulate on a parity or at some fixed rate. But no premium for the old denarii fixed by the government, provided it was based on the actual value of the coins, would have been large enough to prevent the gradual absorption of the older coins in foreign trade if they were preferred by the barbarians.

In view of Nero's monetary reform, it is unfortunate that we have so little information about prices during the reign. Petronius has a general complaint⁷⁰ about rising prices, which he ascribes to a drought.

Some of the contemporary references to the gold and silver coins may be mentioned. Corbulo⁷¹ seems to have re-enacted the older provision that the customs dues at Palmyra should be payable in denarii. Petronius speaks of a slave costing 300 denarii,⁷² and in various places speaks of aurei.⁷³

⁶⁹ *Roman Coins*, 186.

⁷⁰ Petronius, 44. The exact date of this seems uncertain.

⁷¹ IGRR., iii, 1056.

⁷² Petronius, 68.

⁷³ Petronius, 30; 76; 137.

Seneca⁷⁴ says that a man is in debt if he owes aurei, indicating payment by tale perhaps rather than by weight. Although the business records of Lucundus at Pompeii are in sesterces, there are numerous

TABLE K
NERO AUREI

Grains	54/5	55/6	56/7	57/8	58/9	59/60	60/1	61/2	62/3	63/64	64/68
102											1
103											
104											1
105											4
106											6
107											5
108											41
109										1	19
110							1				19
111				1						3	44
112	1							1			58
113	1	1				1				1	41
114	2		1		1		1	1		3	19
115	4						3	2			8
116	5	1	4	2	3	1	3	4	4	3	
117	9	7	2	4	3	3	12	5	1	5	1
118	4	4	1		3	3	13	5	5	4	
119	3	1		1			3		2	2	
120	1					1	1				
121											
122											
123											1

undated references to denarii to be found in that city. Didymus, who is quoted by Priscian, says that an aureus was worth twenty-five denarii.

A wax tablet from Pompeii, probably of A.D. 61⁷⁵,

⁷⁴ *de Benef.*, v, 14, 4.

⁷⁵ C.I.L. iv, tab. cer., 154.1.

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mentions "HS N ∞ LD argentum probum recte dari stipulata est." (She stipulated that there be given 1450 sesterces of thoroughly good silver).

GALBA

In no other period of seven months in Rome's history were so many coins or so many varieties produced. Galba issued gold at Rome, in Spain, and in Gaul. The point of concentration in the sixty-nine coins assigned to the Roman mint seems to be at 112 grains (7.26 grams) with 78.1% of the coins falling within a range of 110 to 114 grains. This indicates that the Roman mint was continuing the reformed standard of Nero. The point of concentration in fourteen coins assigned to the Spanish mint is 118 grains (7.65 grams) with over 92% of the coins falling within a range of 116 to 120 grains. This seems to indicate that the Spanish province did not like Nero's innovation, and that, if given time, the entire coinage of the Empire might have returned to the pre-Neronian standards. The three Gallic coins seem to follow the Roman rather than the Spanish standard, but the number is too small to permit any definite statement.

This difference in standards is also shown by the average weights of thirty-eight coins given by Mattingly:

Mint	Number of coins	Weight in grams	Weight in grains
Rome	25	7.26	112.06
Spain	10	7.69	118.72
Gaul	3	7.39	114.10

According to Mattingly thirty-six denarii from the Roman mint average 50.46 grains (3.27 grams), while twenty-eight from Spain average 51.84 grains (3.36 grams).⁷⁶ According to Wruck, sixteen Syrian tetradrachms average 14.64 grams, with a high of 15.20 and a low of 13.71 grams.⁷⁷

Hammer⁷⁸ gives analyses of three coins with 92.1% of silver, while Ondrouch⁷⁹ gives one with 94.1%.

In view of the shortness of the reign and of the wide difference in weights between the aurei from the Roman and Spanish mints, it is impossible to show a satisfactory ratio between gold and silver.

OTHO AND VITELLIUS

The fifty-eight aurei of Otho show a point of concentration at 111 grains, which is to be compared with the average weight of seventeen aurei of 111.71 grains (7.24 grams) given by Mattingly. Both weights indicate that Otho continued the reform standard of Nero. The average weight of

⁷⁶ BMC., i, lii. There is an error in the statement about the Gallic denarii. Ondrouch (*op. cit.*, 12) gives 3.20, 3.24; Edwards (Yale Coll., 88) gives 3.18, 3.10; *Berl. Münzbl.*, (1914, 120) gives 3.50, 3.45, 3.50, 3.25, 3.43, Cardoso (*op. cit.*, 112) gives 3.5; *Num. Zeit.*, (1914, 228) gives 3.14, 3.33; *Num. Chron.*, (1939, 216) gives 3.46, 3.45, 3.15, 3.19; Naville Sale 17 gives 3.12, 3.28, 3.29, 3.52, 3.23, 3.28; Helbing Sale of Oct. 24, 1937, gives 3.2, 3.0; Princeton Univ. has 3.42, 3.34; *Num. Chron.*, (1931, 164) gives 48.2 grains; *Bonner Jahrb.*, (111/112, 419) gives 3.57 grams; *Museo Ital. de Antich. Class.* (ii, 290) gives one at 3.51.

⁷⁷ *Num. Chron.*, (1931, 164) gives one at 223.3 grains.

⁷⁸ *Die Feingehalt* 97.

⁷⁹ *Vyskovce*, 11.

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thirty-two denarii is 52.01 grains (3.37 grams).⁸⁰ Thirteen Syrian tetradrachms, according to Wruck, average 14.57 grams with a high of 15.03 and a low of 12.95 grams.⁸¹ Ondrouch⁸² gives an analysis of one coin with 98.15% of silver.

The eighty-three aurei of Vitellius indicate a point of concentration at 112 grains, with over 67% of the coins falling within a range of 110 to 114 grains. Vitellius coined gold at three mints and Mattingly gives average weights for each:

Mint	Number of coins	Weight in grams	Weight in grains
Rome	21	7.25	111.97
Lyons	4	7.32	112.95
Spain	10	7.32	112.95

The average weight of the denarius shows a wider range.⁸³

⁸⁰ Ondrouch (*op. cit.*, 12) gives 3.03, 3.18, 3.23; *Berl. Münzbl.*, (1914, 120) gives 3.30, 2.45, 3.58; *Num. Zeit.*, (1914, 228) gives 3.36, 3.39; Naville Sale 17 gives 3.46, 3.36; Princeton Univ. has 3.13, 3.39; Helbing Sale of Oct. 24, 1927, gives 3.4; *Num. Chron.*, (1931, 164) gives 51.6 grains; Amer. Num. Soc. has 3.53. *Notizie degli Scavi* (1935, 366) gives one at 3.40; *Museo Ital.* (ii, 290) gives 3.36, 3.53, 3.66.

⁸¹ *Num. Chron.*, (1931, 160) gives 215.8 grains.

⁸² Ondrouch, *op. cit.*, 11. Hammer (*op. cit.*, 112) gives one Alexandrian tetradrachm with 16.4% of silver.

⁸³ Ondrouch (*op. cit.*, 12) gives 3.09, 3.13, 3.16; Edwards (Yale Coll., 89) gives 2.83, 3.26; *Berl. Münzbl.* (1914, 120) gives 3.0, 3.25, 3.60, 3.25, 3.40, 3.45, 3.50, 3.43, 3.35, 3.40, 3.45; *Num. Zeit.* (1914, 228) gives 3.14, 2.17, 3.34, 3.27, 3.06; Naville Sale 17 gives 3.57, 3.88; Helbing Sale, 10/24/27 gives 3.1, 2.9, 3.15; Princeton Univ. has 3.17, 3.01; Amer. Num. Soc. has 3.53; *Num. Chron.* (1931, 164) gives 48.7, 50.9 grains; *Notizie* (1935, 366) gives two averaging 3.40; *Fundber. Schwaben* (1913, 86) gives 4.98, 3.24; *Mus. Ital.* (ii, 290) gives 3.55, 3.60.

Mint	Number of coins	Weight in grams	Weight in grains
Rome	27	3.23	49.78
Spain	11	3.53	54.38
Lyons	10	3.36	51.76

An analysis of two coins shows one with 80.8%,⁸⁴ and one with 86.5% of silver.⁸⁵

The coins of Otho indicate a ratio between gold and silver of 1 : 11.71, while those of Vitellius indicate a ratio of 1 : 11.44.

TABLE L

AUREI

Grains	Rome	Galba Spain	Gaul	Otho	Vitellius
95					1
104	1			1	
105					4
106	1			1	2
107	1			3	3
108	8			2	7
109	2			4	5
110	4			10	3
111	14			8	14
112	11			12	18
113	17		2	9	14
114	8	1		8	7
115					4
116	1		1		
117		2			1
118	1	7			
119		2			
120		2			

⁸⁴ Hammer, 97.

⁸⁵ Ondrouch, 11.

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VESPASIAN

The aurei of Vespasian⁸⁶ indicate either poor minting control or, less likely, a difference in standards at different mints or times. It should be pointed out, however, that the table M seems to indicate a tendency toward heavier coins in the eastern mints. The distribution of the weights of the individual coins, disregarding those under or over the range shown here, is as follows:

Weight in grains	Years		Total
	69/72	73/79	
108	27	39	66
109	13	24	37
110	29	49	78
111	55	83	138
112	35	78	113
113	35	89	124
114	9	32	41
115	5	10	15

If the totals are considered and if the point of concentration is considered to be 112 grains, then 56.3% of the total fall within a range of 111 to 113 grains and 74.2% within a range of 110 to 114 grains. These results are not appreciably changed if one takes 111 grains as the point of concentration in the earlier group and 112 grains in the later group.

⁸⁶ Kubitschek (*Rundschau über ein Quinquennium*), says that under the Flavian dynasty an aureus of about 7.4 grams was exchanged with 25 denarii of 3.41 grams and of about 90% purity.

Mattingly⁸⁷ gives the following average weights:

Mint	Number of coins	Weight in grains	Weight in grams
Rome	86	112.24	7.27*
Tarraco	16	111.9	7.25
Lyons	40	112.15	7.26

* With a peak at 112.5 grains.

The average weight of 304 denarii from various mints is 47.99 grains (3.11 grams), but no definite peak is shown.⁸⁸ Sydenham gives weights of twenty-four didrachmae of Caesarea that average 106.0 grains, and of six drachmae that average 53.7 grains.⁸⁹ According to Wruck, eighty-seven Syrian tetradrachms have an average weight of 14.43

⁸⁷ BMC., ii, xiv; Hultsch, (*Metrol.*, 306) gives the average as 7.30 grams.

⁸⁸ Ondrouch (*Vyskovce*) gives 2.95, 3.12, 3.16, 3.16, 3.30, 3.30, 3.30; Edwards (Yale Coll., 89) gives 2.5, 3.11, 2.99, 3.56, 3.36, 3.17, 2.85, 2.83, 3.32, 3.46; *Num. Zeit.* (1914, 228) gives 3.17, 3.15, 2.69, 2.75, 3.42; *Berl. Münzbl.* (1914, 120) gives 3.35; Cardoso (*op. cit.*, 116) gives 2.7, 3.2, 3.5, 3.0, 3.0, 3.2, 3.3; Naville Sale 17 gives 3.10 from Ephesus and 2.85, 3.43, 3.63, 3.05 from Rome. Helbing Sale 10/24/27 gives 3.25, 3.4; *Fundber. Schwaben* (1913, 86) gives sixteen that average 2.992 and one of Titus at 2.9; *Notizie* (1935, 366) gives seven of Vespasian and three of Domitian Caesar all averaging 3.40; *Museo Ital.* (ii, 290) gives 3.44, 3.94, 3.56, 3.50, 3.48, 3.54, 3.54, 3.56, 3.34, 3.55, 3.56, 3.40, 3.59, 3.58, 3.48, 3.58; for Titus Caesar 3.56, 3.60, 3.63, 3.59; for Domitian Caesar 3.49, 3.45, 3.50, 3.60, 3.45, 3.51; Princeton Univ. has 2.84, 3.06, 3.04, 3.10, 3.33, 2.91, 3.29, 2.90, 3.11, 2.94, 2.70, 3.15, 3.23, 2.85, 2.87, 3.38, 2.91, 2.90, 3.14; Amer. Num. Soc. has 3.15, 2.88, 3.30, 3.19; *Num. Chron.* (1931, 164) gives 50.4, 50.3, 50.5, 49.7, 43.4 grains.

⁸⁹ Egger Sale 46 gives a drachma at 3.01 and a didrachma at 6.94; Ratto Sale 4/4/27 gives 6.83, 6.86, 6.86, 6.93, 6.59, 6.67, 6.93; Ciani Sale of Apr. 28, 1925 gives 7.0, 6.45, 7.15, 6.55, 6.50, 6.95, 6.70, 7.20.

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grams with a high of 17.60 and a low of 12.50 grams.⁹⁰

Hammer⁹¹ gives analyses of six coins, one each with 88.6, 88.1, 87.8, 80.1, 80.0, and 79.8% of silver, while Ondrouch⁹² gives one each with 89.4 and 85.1% of silver.

Using the actual weights of the aureus and of the denarius, the ratio between gold and silver is 1 : 10.71.

In the struggle for control of the Empire, Vespasian had opened mints for gold and silver at Antioch (closed in A.D. 72), Alexandria (closed in 70 or 71), Ephesus (closed in A.D. 74), Byzantium, Tarraco (closed in A.D. 72 or 73), and Lyons (closed in A.D. 72 or 73). After his authority was established, Vespasian centralized the coinage of gold and silver at Rome. Though the Lyons mint was re-opened late in the reign, it was for subsidiary coins only, not for gold or silver.

Until the time of Vespasian the silver money of Rhodes circulated in Asia Minor, although actual coinage had ceased before then.⁹³

From a papyrus of A.D. 72/3⁹⁴ which indicates that the Jewish poll tax of two denarii was paid with 8 drachmae, 2 obols, an effort has been made to show

⁹⁰ Egger Sale 46 gives 14.99; Windisch-Graetz Coll. gives 12.43; *Num. Chron.* (1931, 160) gives 217.1, 213.7, 207.5 grains.

⁹¹ Hammer. 97.

⁹² *Vyskovce*, 11; Hammer (*op. cit.* 112) gives a tetradrachm of Antioch with 56.5% of silver.

⁹³ Chapot, *La Province romaine proconsulaire d'Asie*, 342.

⁹⁴ Wilcken, *Grundzüge*, ii, 61. This tax lasted at least until the time of Trajan.

a ratio between gold and silver of 1 : 7.3.⁹⁶ This ratio is so different from that shown by the relation of the aureus and denarius that it is patently wrong. It also disregards the fact that the Egyptian tetradrachm was a fiat coin.

An inscription from Cibyra⁹⁷ mentions both Rhodian drachmae and Roman denarii and states that the Rhodian drachma, very small and of low weight, was worth 10 asses, while the denarius was worth sixteen. This low valuation of the Rhodian drachma may indicate an effort to force these old silver coins out of circulation, but it should be pointed out that the donation recorded here was made in Rhodian drachmae. Suetonius has an interesting statement to the effect that Vespasian needed forty billion sesterces to restore the public credit. The meaning of this is far from clear. In the modern sense the government had no debts and could have no debts except unpaid current obligations. Even if one assumes that Vespasian owed a year's pay to the entire army, that debt would be only about one percent of the figure mentioned by Suetonius. In another way, the figure of forty billion sesterces is about eighty times the entire income of the government as estimated for the time of Tiberius.⁹⁸ As it stands the figure is so great as to be meaningless.

⁹⁶ *Amer. Jour. Archaeology*, xxxviii, 50; *Klio*, 1932, 124.

⁹⁷ CIG., 4380; IGRR., iv, 915, dated in A.D. 74; Laum (*Stiftungen in der griechischen und römischen Antike*, ii, 162) gives the date as 73 A.D.

⁹⁸ *Econ. Survey*, v, 45 and 37. Tenney Frank accepts Suetonius at face value.

TABLE M

Grains	VESPASIAN AUREI											
	Rome 69/70	Lyons 69/70	Asia Minor 69/70	Syria 69/70	Illyr- icum 69/70	Alexan- dria 69/70	Tar- raco 69/72	Rome 70/72	Lyons 70/71	Ephe- sus 70/71	Rome 71/2	Lyons 72/3
103												
104		2										
105												
106				1			1	1				
107		1						1				
108	3	1					8	9	6		1	1
109	2	2	1					5	2		1	
110	7	3			1			7	9		2	3
111	10	13		1			5	14	10	1		2
112	10	6		1			2	11	5			1
113	5	4		2		1	4	7	10	1		2
114	3			1				3	1			
115			1					1	2			1
116			1	1								
117				1		1						
118		1		1								
119				1								
120				1								

TABLE M—Continued

Grains	Ephe- sus 72	Antioch 72	Asia 72/3	Rome 72/3	Rome 73	Lyons 73	Rome 74	75	75/6	75/9	77/8	78/9
97					1		1				1	1
98												1
99					1							
100												
101												
102												
103												1
104									1	1		1
105				1		1	1	2			2	
106					4		2			1	2	
107					5		6			3	1	
108					5		4			5	15	7
109				1	5		4	1	2	7	1	3
110				1	8	2	2	7		6	10	10
111		1		2	15	4	8	9	1	20	15	7
112				5	13		7	3	6	20	12	11
113		1		3	18		7	7	2	22	25	3
114		1	2	2	5		2	1		9	8	3
115	1			1			2	1	2	2	3	
116					1					2	1	
117		1			1					1		

Pliny⁹⁹ says that the denarius was coined at eighty-four to the pound and the aureus at forty-five. Throughout the Natural History there are numerous prices given in asses, sesterces, and denarii, but none apparently in aurei. The Periplus, written no later than this time, speaks of both aurei and denarii.¹⁰⁰

In a Palmyrene inscription¹⁰¹ of A.D. 70/71 fifteen gold censers are valued at 150 denarii.

TITUS

The aurei of Titus show a point of concentration at 111 grains (7.19 grams). Of the coins shown in the table, 77.3% fall within a range of 109 to 113 grains. Mattingly¹⁰² gives the average weight of 25 coins as 111.64 grains (7.23 grams) with no point of concentration evident. The average weight of 129 denarii¹⁰³ is 49.68 grains (3.22 grams). In 102 denarii weighed by Mattingly there was a well defined peak at 50 grains (3.24 grams).

⁹⁹ Pliny, *Hist. Nat.*, xxxiii, 9, 46; cf. xii, 14, 62.

¹⁰⁰ *Periplus maris Erithr.*, viii, 49. On the date of the Periplus see *Camb. Anc. Hist.*, x, 881. Dio Cassius (lxvi, 14, 5) mentions aurei in connection with Vespasian.

¹⁰¹ Prentice, *Gk. and Latin Inscr.*, 352; *Corp. Inscript. Semit.*, 3923.

¹⁰² BMC., ii, xiv; Hultsch (*Metrol.*, 306) gives an average of 7.29 grams.

¹⁰³ Ondrouch (*Vyskovce*, 12) gives four weights: 3.20, 3.25, 3.28, 3.29; Edwards (Yale Coll.) gives 3.14, 3.4, 3.39, 3.24; Cardoso (*op. cit.*) gives 3.2, 3.0; *Num. Chron.* (1914, 228) gives 3.01, 3.34, 3.17, 2.93; Princeton Univ. has 2.90, 3.21, 2.91, 3.29, 2.83, 2.82, 3.12, 3.11, 3.49, 3.53; Amer. Num. Soc. has 3.19, 3.41, 3.18; *Num. Chron.* (1931, 164) gives 54.9, 50.1, 49.4, 50.4, 49.2 grains. *Fundber. Schwaben* (1913, 86) gives one at 3.35 grams, while *Notizie* (1935, 366) gives 2 that average 3.45.

Using the actual weights of the aureus and the denarius, the ratio of gold to silver is 1 : 11.19.

Wruck gives the average weight of five Syrian tetradrachms as 14.33 grams with a high at 14.48 and a low at 14.25 grams. Ondrouch gives analyses of three coins, one each with 84.5, 83.4, and 76% of silver.¹⁰⁴

TABLE N
TITUS AUREI

Grains	Rome 79	Rome 80
102	1	
103		
104	1	
105		
106	2	1
107		2
108	2	7
109	6	10
110	2	6
111	4	13
112	4	11
113	6	6
114	1	3
115		

DOMITIAN

Domitian seems to have had ideas about the currency differing radically from those of his brother and father. Omitting the coins issued in A.D. 81 and those issued between A.D. 81 and 84, chiefly with the name of Domitia, the remaining aurei show an unsatisfactory point of concentration at 116 grains (7.52 grams). The twelve coins of A.D. 81 show no peak, while the fifty-three coins issued

¹⁰⁴ Ondrouch, 11.

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with the name of Domitia show a peak at 118 or 119 grains, forming the heaviest group of any issued during the reign of Domitian.

Mattingly¹⁰⁶ gives the average weight of three aurei dated in A.D. 81/82 as 111.9 grains (7.25 grams), and of forty minted between A.D. 82 and 96 as 117 grains (7.58 grams). Of course it is unsafe to draw inferences from the weights of three coins, though their average weight is in close agreement with the weight of the aurei of Titus. The twelve coins dated in A.D. 81 that appear in Table O average about 113 grains.

Mattingly gives the average weight of 29 denarii dated in A.D. 81/82 as 49.1 grains (3.18 grams), and of 144 denarii issued between A.D. 83 and 96 as 51.2 grains (3.32 grams) with a peak at 53 grains (3.43 grams). Mickwitz¹⁰⁶ gives the average of sixty denarii as 3.21 grams.

The distribution by weight of available denarii is as follows:¹⁰⁷

¹⁰⁶ BMC., ii, xiv. Frank (*Econ. Survey*, v, 91) says the coins of Domitian and Nerva are "apt to be slightly heavier" than those of Vespasian.

¹⁰⁶ Arctos, iii, 3 quoting Weber.

¹⁰⁷ Ondrouch gives 3.24, 3.30, 3.35, 3.36, 3.36; Edwards (Yale Coll.) gives 3.11, 2.98, 3.35, 3.33, 3.22, 2.96, 3.16, 3.32, 3.26, 3.35; Cardoso (*op. cit.*, 126) gives 3.0, 3.2 as Caesar and 3.2, 3.2, 3.3, 3.0 as Emperor. The Table includes weights given by Montelhet, *Musée Crozatier*, ii, 79; Naville Sale 2; Helbing Sales of Mar. 4, 1927 and Oct. 24, 1927; Weber, *An Egyptian Hoard*; Naville Sale 17; Princeton Univ.; American Num. Soc.; *Num Chron.*, 1931, 164. *Notizie* (1935, 366) gives 9 dated after 81 that average 3.47 and *Fundber. Schwaben*. (1913, 86) gives 3 that average 3.25.

Weight in grains	81/82	81/84	83/96
Less than 44			6
44			1
45	1		4
46	1	1	9
47	6		11
48	3	1	19
49	4		34
50	1		22
51	3		46
52	5		27
53		3	24
54		1	12
55		1	10
56			3

The third group does not seem to bear out the statement of Mattingly that the point of concentration is at 53 grains. Nearly 71% of the coins in the present table fall within a range of 49 to 53 grains with a point of concentration at 51 grains.

According to Wruck, twenty-three Syrian tetradrachms average 14.43 grams with a high of 15.34 and a low of 12.21 grams. Sydenham gives the weights of seventeen didrachmae from Caesarea which average 104.5 grains and of two drachmae which average 53.75 grains.¹⁰⁸ The Syrian drachma averaged, therefore, 3.61 grams while the Caesarea drachma averaged 3.44 grams.

In Persia 52 tetradrachms and 24 drachmae

¹⁰⁸ In addition, Egger Sale 46 gives didrachmae at 6.88 and 7.01; Egger Sale 45 gives 7.23; Naville Sale 15 gives 7.22; Ratto Sale of Apr. 4, 1927, gives 6.93, 7.10, 7.0.

issued by Pacorus II (A.D. 77/110) average 11.72 and 3.55 grams respectively.¹⁰⁹

Using the actual weights of the aureus and denarius, the two periods, that of A.D. 81/82 and that of 83/96, both show approximately the same ratio between gold and silver, namely 1 : 10.94 and 1 : 11.

The reasons for Domitian's return to the heavier standard current before the reform of Nero are difficult to see. The ratio of gold to silver was not changed. The change in weights should have reduced prices, yet Domitian substantially increased the base pay of the army. The change has been praised. One writer¹¹⁰ says of Domitian: "he restored the currency and maintained it at a level of purity that it had seldom reached before and was never to reach again." The practical basis for this eulogy is not clear.

Hammer¹¹¹ gives an analysis of seven coins, one with 92.5, five with 91.4, and one with 86% of silver. Ondrouch¹¹² gives two analyses, one with 93.3, the other with 91.95% of silver. Martial¹¹³ speaks of a price of one denarius for his book. An edict of A.D. 93 issued at Pisidian Antioch¹¹⁴ orders that the price of wheat is not to exceed one denarius per modius, while in Revelation¹¹⁵ the

¹⁰⁹ BMC.; Naville Sale 12; Prokesch-Osten *op. cit.*, Markoff *op. cit.*

¹¹⁰ *Jour. Roman Studies.*, 1930, 70.

¹¹¹ Hammer, 97.

¹¹² Vyskovce, 11.

¹¹³ Martial, i, 117; denarii also in ix, 32; ix, 100.

¹¹⁴ *Amer. Phil. Assoc. Trans.*, lv, 5.

¹¹⁵ Revel., vi, 6.

price of one choinix of wheat, or of three choinices of barley, is given as a denarius.

TABLE O

DOMITIAN AUREI

Grains	81	81/4	82	83	84	85	86	88/9	90/1	92/4	95/6
99											
100								1			
101											
102											
103											
104			1								
105											
106		1							1		
107			1	1	1			1			1
108											
109											
110	2	2	1								
111	2							1			
112	3	1			1						
113	1	4	2		1		1	1	2		1
114	1	3		1		1	1	3	1	2	
115		3			1	1	10	6	1	1	1
116	1	5				2	7	7	4	5	1
117		6	3	1	1	1	1	3	3	2	
118	2	12	3	2	1	3	1	2	5	1	
119		10				2		1	1	3	
120		5	1	2	2	4					
121		1	1								
122											

NERVA

The sixty-four aurei listed here show a poor point of concentration at 116 grains (7.52 grams), with 75% of the coins falling within a range of 114 to 118 grains. Nerva therefore was maintaining the heavy standard of Domitian.

Mattingly gives the average weight of thirteen aurei as 116.64 grains (7.56 grams) with a peak at

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the same place.¹¹⁶ The average weight of 113 denarii whose weights are ascertainable is 50.18 grains (3.25 grams). This compares with the average weight of 50.78 grains (3.29 grams) for fifty-three denarii given by Mattingly and with an average of 3.24 grams for twenty-four coins given by Weber.¹¹⁷ According to Wruck, thirteen Syrian tetradrachms¹¹⁸ average 14.83 grams with a high of

TABLE P
NERVA AUREI

Grains	96	97/8
111		1
112	1	1
113	2	3
114	2	5
115	3	11
116	6	6
117	2	9
118	1	3
119		3
120	1	2
121	1	
122	1	

15.60 and a low of 13.39 grams. Sydenham gives the weights of twenty didrachmae from Caesarea which average 102.2 grains.¹¹⁹

¹¹⁶ Hultsch (*Metrol.*, 306) gives 7.45 grams.

¹¹⁷ Ondrouch (*op. cit.*, 12) gives 3.20, 3.35, 3.64; Edwards (*Yale Coll.*) gives 3.33, 3.26, 3.21; *Num. Zeit.* (1914, 228) gives 3.40, 3.25; Cardoso (*op. cit.*) gives 3.0, 3.0; Montelhet (*Musée Crozatier*, ii, 90) gives 2.86, 3.17, 3.08, 3.13, 3.06, 2.90, 3.38, 3.16, 3.40; Naville Sale 2 gives 3.08, 3.34, 3.08, 3.15, 3.47, 3.14, 3.10, 3.32, 3.59; Helbing Sale of Oct. 24, 1927, gives 3.1; Princeton Univ. has 3.01, 3.32, 3.26, 3.32, 3.22, 3.42; Amer. Num. Soc. has 3.20.

¹¹⁸ Egger Sale 46 gives 14.63.

¹¹⁹ In addition Naville Sale 15 gives 6.92; Ratto Sale of Apr. 4, 1927, gives 7.0, 7.0, 6.77.

Mattingly gives the analysis of one coin with 89.1% of silver,¹²⁰ while Hammer¹²¹ gives one with 91.7%, and Ondrouch¹²² gives one with 91.2% of silver.

Based on the actual weights of the aureus and denarius, the ratio of gold to silver is 1 : 10.81.

TRAJAN

It seems probable that early in his reign Trajan reduced the weight of the aureus to the reformed standard of Nero, but unfortunately the weights of the twenty-four coins assigned to A.D. 98/99 give no clear point of concentration. The coins of A.D. 100 and later show a point of concentration at 111 grains with over 78% falling within a range of 109 to 113 grains.

Mattingly gives the average weight of four aurei issued in A.D. 98/99 as 117.25 grains (7.59 grams); of eleven restoration aurei of A.D. 107 as 111.9 grains (7.25 grams), and of 123 other aurei issued in A.D. 100 and later as 111.4 grains (7.22 grams).¹²³ This last group has a definite peak at 111 grains (7.19 grams).

According to Mattingly twenty-three denarii of the restoration series show an average weight of 47.48 grains (3.08 grams) and 464 other denarii an

¹²⁰ BMC., iii, xxi.

¹²¹ Hammer, 97.

¹²² Vyskovce, 11.

¹²³ Hultsch (*Metrol.*, 306) says 7.21 grams.

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average of 49.64 grains (3.21 grams). This last group has a definite peak at 49 grains (3.17 grams).¹²⁴

The denarii whose weights are given in various sources may be classified as follows:

Number by chronological groups:

Weight — 38 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 and over	98/99	100	101/2	103/11	112/14	114/17	Restor.	Total
— 38				1		1		2
38				2				2
39		1		1		1		3
40				4	2	2	1	9
41		1		5		2	2	10
42	2			11	3	2		18
43	1	2	2	19	7	6	1	38
44	1	2	4	11	6	7	2	33
45	3	2	2	25	3	5	2	42
46	4	1	9	37	6	10	2	69
47	9	2	6	20	4	7	6	54
48	5	3	2	31	7	5	3	56
49	7	2	14	35	15	10	1	84
50	11	5	4	30	7	5	1	63
51	6	3	5	31	6	4	1	56
52	5		5	17	5	9	2	43
53	12	1	1	16	6	10		46
54	1			12	7	3		23
55	1	1	2	3	4	3		14
56						3		3
57 and over	2				1	1		4

¹²⁴ In the table appear coins from Ondrouch, *Vyskovce*; Edwards, Yale Coll.; Montelhet, *Mus. Crosatier*, ii, 94; *Univ. of Colo. Studies*, xxv, 237; Cardoso, *Buenos Aires*, 136; Naville Sales 10, 17; Princeton Univ.; Amer. Numis. Soc.; *Num. Chron.*, 1931, 164; *Fundber. Schwaben* (1913, 86) gives four dated after 104 that average 3.05.

The seventy denarii listed here under the year A.D. 98/99 have no well-defined point of concentration, though their weights indicate that it should be in excess of 50 grains. The 602 denarii dated in the year A.D. 100 and later have a reasonably well-defined point of concentration at 49 grains, 45.5% of the coins falling within a range of 47 to 51 grains.

Mattingly gives an analysis of three coins with 90.73, 79.6, and 78.1% of silver;¹²⁵ Hammer gives one coin issued in A.D. 98/99 with 92.8% of silver and for coins issued after that date one each with 88.4, 86.2, 85.5, 83.8, 79.2, and 78.5% of silver; Ondrouch¹²⁶ gives one each with 87.3 and 85.1% of silver.

The coins of 98/99 indicate a ratio between gold and silver of 1 : 10.97, while the coins issued in A.D. 100 and later indicate a ratio of 1 : 11.04.¹²⁷ Obviously no change in ratio can be assumed from differences that are so small.

Wruck gives the average weight of thirteen Syrian tetradrachms dated in A.D. 98/99 as 14.56 grams with a high of 15.44 and a low of 14.21 grams. The average weight of 166 tetradrachms dated in A.D. 100 and later is 14.06 grams with a high of 15.25 and a low of 12.28 grams.¹²⁸

¹²⁵ *Klio* (xxvi, 97) says 12 to 20% depreciation. Mattingly (*Roman Coins*, 125) says about 15% debasement.

¹²⁶ Hammer (*op. cit.*, 112) gives one tetradrachm from Caesarea with 62.5 and one from Antioch with 57.2% of silver.

¹²⁷ Mickwitz (*Geld*, 56) believes in a ratio of 1 : 10 for Trajan's reign; in *Aegyptus*, 1933, 102 for that ratio during the second century; Heichelheim (*Klio*, xxv, 124) agrees.

¹²⁸ Egger Sale 46 gives 14.85, 14.76, 15.44, 13.84, 14.37 grams; *Num. Chron.* (1931, 160) gives 221.2, 228.7, 214.7, 209.9, 209.6, 209.3 grains.

For the period A.D. 98/99 Sydenham gives the weights of sixteen didrachmae and of nine drachmae of Caesarea that average 104 grains for the former and 51.1 grains for the latter.¹²⁹ The combined groups show an average of 51.8 grains for the drachma.

For the period of A.D. 100 and later Sydenham¹³⁰ gives the weights of twenty-five tridrachmae that average 162.4 grains; of thirty-five didrachmae that average 102 grains, and of twenty-two drachmae that average 50.4 grains. The combined groups show an average for the drachma of 52.3 grains.

These changes are not what would be expected. Comparing the years A.D. 98/99 with the rest of the reign, the denarius shows a drop of about 8%, the Syrian drachma a drop of about 4%, while the Caesarea drachma shows an increase of about 2%.¹³¹

The reasons that led Trajan to return to the Neronian standard for gold and silver are no more clear than the reasons that led Domitian to attempt a return to the standards of the pre-Neronian period.

In A.D. 107, after the Dacian wars, Trajan

¹²⁹ In addition Ratto Sale of Apr. 4, 1927, gives 10.17, 7.21, both of A.D. 98/99.

¹³⁰ Ratto Sale of Apr. 4, 1927, gives 7.44, 6.14, 6.88, 6.72, 6.54; Ciani Sale of Apr. 18, 1925 gives 14.30, 6.55, 3.05, 10.20, 3.20, 3.30, 6.45; Windisch-Graetz gives 6.20; Egger Sale 46 gives 3.45, 2.91, 3.07, 7.05, 5.64, 7.07, 6.95, 6.73, 5.73, 6.30, 6.45, 6.74; Naville Sale 15 gives 6.65.

¹³¹ The weights of the Alexandrian tetradrachms as given by Milne (*Catalogue of Alexandrian Coins in the Ashmolean Museum*) indicate no change after 98/99 A.D.

"melted down all obsolete coins."¹³² This is all of what Dio may have said on this subject that is preserved in the late epitome made by Xiphilinus. While many guesses have been advanced as to the meaning of this sentence, including attempts to connect it with the reduction of weights that had taken place some seven years earlier, the action actually taken at this time by Trajan in regard to the "obsolete" coins seems to be clearly shown by the analysis of coin hoards which appears on Table Q. In this table the vertical columns list the coins of different periods that are found in hoards presumably buried during the lifetime of the ruler whose name appears at the top of the column. The horizontal lines list the rulers whose coins appear in the hoards. About 115 hoards from all parts of Europe and over 30,000 coins appear in the tabulation.¹³³

¹³² Dio Cassius, lxxviii, 15; Mattingly (BMC., iii, lxxxviii) says "we must suppose that the whole of the coinage down to the reduction of weights by Nero was then called in." He also suggests that the early gold was called in.

¹³³ Because of uncertainties the so-called hoard of Kirkham in *Num. Chron.*, 1936, 316 is not included.

The hoards used to form Table Q are as follows:

Augustus: Villate, Charentenay, Ribnik, Valpovo, Reckelsum.

Tiberius: Laval, Onna, Krefeld, Mainz 1900.

Claudius: Laluque.

Nero: Dombreson.

Vespasian: Stein, Rheingönnheim, Rome.

Domitian: Corbridge, Anglesey, Broos, Aubenton, Otricoli.

Trajan: Bath, Lavenham, Sakka, Mozzatella, Broos, Muncsel.

Hadrian: Gostynin, Niemegk, Swaley, Mallerstang, Waudrez, Volubilis, Castagnaro.

Pius: Carlisle, London, Polnisch-Briesen, Middels Oesterloog, Altenmarkt, Bonyhad, Hedderneim.

Coins issued by Augustus, Tiberius, Caligula, and Claudius are reasonably common in these hoards until the end of Trajan's reign. It is noteworthy that only four coins issued by these rulers occur among the thousands of other coins found in hoards buried from the time of Hadrian to that of Alexander Severus. It may also be noticed that the coins of Marcus Antonius persist through the entire period. It seems clear that what Trajan did in A.D. 107 was to call in all the silver coins issued by Augustus, Tiberius, Caligula and Claudius. It would be reasonable to assume that the denarii issued by Nero before A.D. 63 were also called in, but the lack of information about the dating of many of the Neronian coins in the hoards mentioned here make certainty in this matter impossible.

Unfortunately too few of the hoards of gold coins are recorded with sufficient accuracy to construct a table. The inference, however, from twenty-seven

Footnote 133 continued.

Marcus: Castle Bromwich, Allerton, Fickmühlen, Chalfont St. Giles, Vyskovce, Lindloh, Freesemmoor, Fröndenberg, Erfurt, Siedlimovo, Lengowo, Bor-u-Kluku, Hede, Hinckley, Nuneaton, Knapworth, Pyhrn, Mehr, Deutsch-Altenburg, Tibod, Sotin, Mont, Osiek, Mocsolad, Hallegarda.

Commodus: Djupbrunn, Träskväller, Oja, Lydney, Newbiggin, Havor, Borynia, Gräpel, Bucharest, Ballo, Wien, Kristendorf, Sächsisch-Regen, Karlsburg, Prelasko, Unterammergau, Edwinstowe, Eskelhem, Iwno, Hirschhof.

Septimius: Sindarve, Sojvide, Robbedale, Skovgaard, Denland, Silchester, Sigdes, Robbenarve, Regenwalde, Lashorst, Bristol, Flonheim, Oosterbeek, Waldkirch, Karajeno, Silli-en-Gauffern, Jupille, Starkcsova.

Caracalla: Muswell Hill, Kristendorf, Annecy, Pre-Haut.

Alexander: Hulterstad, Lengerich, St. Mary Cray, Falkirk, Reims, Colchester, Baden, Unterhaidin, Mehadia, Wetzheim, Kucevo.

IN THE ROMAN EMPIRE

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TABLE Q

	Augustus	Tiberius	Claudius	Nero	Vespasian	Domitian	Trajan	Hadrian	Pius	Marcus	Commodus	Septimius	Caracalla	Elagabalus	Alexander
Alexander															249
Elagabalus															394
Macrinus															96
Caracalla												626	91		739
Septimius												2	332		2078
Didius												17	1		2
Pertinax												633	3		5
Commodus											132	2031	102		463
Marcus										1142	1232	633	313		1186
Pius									47	1550	1327	1990	301		1120
Hadrian								484	184	1535	951	1088	231		498
Trajan							204	641	216	1539	893	721	237		371
Domitian							61	74	19	129	82	61	29		26
Vespasian						26	259	250	87	529	239	114	77		108
Nero						13	107	42	18	200	68	61	11		71
Domitian						95	151	197	115	1220	469	407	99		429
Titus						15	7	11	4	62	25	21	5		21
Vespasian						3	4	6	3	45	11	7	5		7
Vitellius						11	6	9	6	38	19	11	6		15
Otho						31	13	15	12	106	39	23	8		31
Galba						3	14								
Nero				1		1	16								
Claudius			1	7		41	3								
Caligula		354	46	2		1	3								
Tiberius		349	13	80	13	41	3			1	2				
Augustus	936	662	57	38	23	46	35	1							
Republic	326			300	272	393	419	51	62	579	181	89	12		24

such hoards is that the gold struck before the reform of Nero was likewise called in.

There are at least two important objections to the idea¹³⁴ that Trajan debased the silver money in A.D. 107. In the first place, the weights of extant coins seem to indicate that the reduction of weight and presumably of silver content had occurred at the same time (A.D. 100) that the weight of the aureus was reduced. In the second place, the conquest of Dacia made available to the government very considerable amounts of gold and silver.

The idea of profit for the government as the motivating cause¹³⁵ in such a remelting of old coins seems unsatisfactory, for the number of the old coins in circulation must have been comparatively small and the degree of debasement was not large. Then, again, nothing appears to have been done about the heavy denarii of Domitian and of Nerva. This fact seems to make untenable the idea that Trajan was interested in retiring all coins differing markedly from his own, as an aid toward business convenience. It is interesting to note that Trajan's "melting" of the old coins coincided in date with the appearance of his own restoration series commemorating the great figures of the past.

Mickwitz¹³⁶ considers that Trajan's debasement of the silver was occasioned by a fall in the price of gold brought about by the amount of that metal thrown on the market as a result of the Dacian

¹³⁴ Segre, *Metrol.*, 360.

¹³⁵ Burns, *Money*, 419; Despaux, *Les Devaluations*, 117.

¹³⁶ Geld, 32; see also *Klio*, 1932, 124; *Econ. Hist.*, 1935, 6.

wars. The result of these wars, he says, was a decline in the relation of gold prices to silver prices of some 3 to 4%, and that this is evidenced by the papyri. But P. Baden 37, which is the chief support of this idea, is too indefinite in its meaning to be used properly in support of this or any other idea. The pertinent sentence of this document is as follows: "gold (an adjective, not a noun), which was selling at 15 drachmae, has fallen to 11." Many attempts at explanation have been made, but the widely divergent theories that are based on this document show that no definite conclusions can be made as to its meaning. Trajan was hardly likely to upset the monetary market by a sudden release of bullion.

This re-adjustment of the currency, both as to weight and to fineness, is one of the important events, economically speaking, of Trajan's reign. It is strange that no adequate reason for it has been found. The history of the reign before the Dacian wars indicates no pressing need of money on the part of the government, while the alleged "orgy of spending from 107 onwards,"¹³⁷ if true, seems to have been based in part at least on the booty from Dacia. Currency depreciation is, it seems, always the result of something that has already happened. The cause in this instance is difficult to find.

In Britain official coins seem to have been so plentiful that local imitations are rare, a condition

¹³⁷ *Camb. Anc. Hist.*, xi, 215.

that lasted well through the century.¹³⁸ This condition could have been brought about by a decline in the activity of local business, as well as by an increase in the supply of imperial coins. Unfortunately we do not know which was the case here. In Scotland¹³⁹ ten coins of pure tin have been found, eight of Trajan and one each of Hadrian and of Marcus Aurelius. Just what these were intended to be is uncertain.

The documents recording the gifts of C. Vibius Salutaris to Ephesus¹⁴⁰ in A.D. 103/4 present some interesting problems. The short Latin inscriptions record the capital sums in sesterces which the accompanying Greek text gives in denarii at the rate of four sesterces to the denarius. Thus 17000 sesterces in one Latin text appears as 4250 denarii in the Greek;¹⁴¹ in another the Latin mentions $33333\frac{1}{2}$ sesterces¹⁴² which the Greek gives as 8333 denarii, 6 asses. This shows that $\frac{3}{8}$ of a denarius is equal to 6 asses ($33333\frac{1}{2} \div 4 = 8333\frac{3}{8}$) and that the denarius therefore was equal to 16 asses. This is not in agreement with the long Greek text given in BM *481. Lines 245ff. show that 750 denarii are to be divided among 1500 persons with the gift to each stated as 9 asses. This indicates

¹³⁸ *Econ. Survey*, iii, 62.

¹³⁹ *Num. Chron.*, 1905, 10.

¹⁴⁰ *Anc. Gk. Inscript. in B. M.*, iii, p. 130; revised text in *op. cit.*, iv, *481. *CIL.*, iii, 14195, 4, 5, 6, 7; Dessau, 7193, 7194. Date A.D. 103/4.

¹⁴¹ This seems to be the sum the long Greek text (BM*481) gives as 4450 denarii.

¹⁴² Which the editor reads twice as $33,323\frac{1}{2}$.

that the denarius was equal to eighteen asses. As will be seen, this rate of 18 asses was the one at which the bankers of Pergamum in the time of Hadrian were required to sell the denarius. Perhaps even under Trajan the rate of exchange fixed by the government was eighteen asses to the denarius, while the rate of sixteen asses found in the bilingual inscriptions was the old traditional relation between the coins. It is, however, far from clear why the bilingual inscriptions should give anything but the true current figure.

Salutaris made two capital gifts, one of 20000 denarii, another of 1500 denarii.¹⁴³ The interest is given as 1800 and 135 denarii, respectively, which proves a rate of nine percent. The text uses three ways of showing this rate of interest: (a) τόκος ἀσσαρίων δεκάδυσ ἀργυρῶν, (b) τόκος δραχμιαῖος and the curious (c) τόκος δραχμιαῖος ἀσσαριαῖος. The rates express the interest per month on each 100 denarii of principal and being legalistic terms naturally should refer to the traditional ratio between the coins concerned. It is not clear why the word "drachma" should be used at all in this connection.¹⁴⁴ The inscription also contains a statement to the effect that if the rate of exchange should go up, more is to be distributed each year. This exchange can refer only to the relative values of the imperial denarius and of the local as. It assumes a greater confidence in

¹⁴³ The inscription gives the total as 11500 denarii due probably to a stone-cutter's error.

¹⁴⁴ The statement in *Econ. Survey*, iv, 900 that the drachma refers to the Rhodian drachma which equalled three quarters of a denarius does not necessarily seem to be implied in this inscription.

the future of the imperial money than in the local coinage. Nothing is said about a fall in the rate of exchange.

A contemporary inscription from Pergamum¹⁴⁵ mentions "silver denarii," as does a papyrus¹⁴⁶ of the year 117. A Spanish inscription¹⁴⁷ gives the cost of a statuette as 62 denarii, while another¹⁴⁸ mentions a capital gift of 100,000 sesterces which was to be loaned at five percent interest, and which provided that part, at least, of the income was to be distributed in denarii. An African inscription shows cattle taxed four denarii each,¹⁴⁹ and an Italian document¹⁵⁰ shows wheat at one denarius a modius.

Tacitus, in a passage dated in this reign, speaks of the fondness of the German tribes for silver, as it was more convenient to spend than gold; in another passage he says that the Germans prefer the old silver.¹⁵¹ Both Martial¹⁵² and Juvenal¹⁵³ speak of aurei.

Epictetus¹⁵⁴ has a very interesting statement: "for just as neither the banker nor the greengrocer may legally refuse the coinage of Caesar, but if you

¹⁴⁵ IGRR., iv, 494; *ibid.*, 1660 from Tira mentions 5 denarii.

¹⁴⁶ PSI., 1063 (A.D. 117).

¹⁴⁷ CIL., ii, 1163.

¹⁴⁸ CIL., ii, 4511 from Barcino (A.D. 107); CIL., vi, 10229 (A.D. 108) mentions denarii.

¹⁴⁹ Bruns, *Fontes*, 114; Van Nostrand, *Imperial Domains*, 26.

¹⁵⁰ CIL., xi, 6117.

¹⁵¹ Tacitus, *Germ.*, 5, 15; Pliny, *ad Traian.*, x, 116 mentions denarii.

¹⁵² Martial, xii, 65.

¹⁵³ Juvenal, v, 122.

¹⁵⁴ *Disc.*, iii, 3, 3.

present it, whether he will or no, he must turn over to you what you are purchasing with it . . .” This statement, which is localized in Epirus, is not in accord with the regulations laid down by Hadrian at Pergamum, regulations which seem to limit the use of imperial money under certain conditions.

TABLE R
TRAJAN AUREI

Grains	98/9	100	101/2	103/11	107	112/14	114/17
100			1	1			
101							
102							
103						2	
104							1
105			2		1	2	
106	2	1		2			1
107	2	1	1	5	3	2	3
108	1	2	4	18	3	10	15
109		2	6	23	2	14	18
110		5	3	25	6	8	26
111	4	5	6	26	8	21	36
112	1	4	4	24	6	18	24
113	1	1	4	17	4	10	9
114	2		2	7		2	4
115	2		1				1
116	2			1			
117	3		1				
118	2			1		1	
119	1						
120	1						
121				1			

HADRIAN

The 578 aurei of Hadrian and of members of his family show a point of concentration at 111 grains (7.19 grams). Over 75% of the total fall within a range of 109 to 113 grains.

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Mattingly gives the average weight of 179 aurei as 111.91 grains (7.25 grams)¹⁵⁵ with a peak at 110.5 grains (7.16 grams). He also gives the average weight of 733 denarii as 49.64 grains (3.21 grams) with a peak at 49 grains (3.17 grams).

Weights of the denarius may be shown in tabular form as follows:¹⁵⁶

Weight in grains	Numbers by dates of issue							Total
	117/25	125/28	128/32	132/34	134/38	Sabina	No date	
35		1						1
36							1	1
37	1						1	2
38		1					1	2
39				2				2
40		1			2		1	4
41	4				4			8
42	10	3	1	1	4		2	21
43	8	2	2	2	8	1	1	24
44	13	2	3	3	17		4	42
45	10	5	2	2	17	2	3	41
46	20	8	3	6	16	3	11	67
47	18	8	9	5	24	1	2	67
48	21	8	3	3	19	2	4	60
49	27	16	4	7	30	1	6	91
50	23	10	5	4	17	9	3	71
51	28	13	10	4	28	5	5	93
52	27	10	3	4	23	3	5	75
53	13	9	3	3	16	6	3	53
54	14	3	2	3	5	2	3	32
55	4	1		1	7	2	2	17
56	2	1			2	1		6
57	1						1	2
58						1		1
59					2			2
60						1	1	2

¹⁵⁵ Hulstsch (*Metrol.*, 306) gives 7.21 grams.

¹⁵⁶ Includes also weights from Ondrouch, *Vyskovce*, 12; Montel-

As will be noticed, there is no well-defined point of concentration, though the table indicates 50 or 51 grains as a possibility.

Two Syrian tetradrachms are said by the B. M. Catalogue to weigh 224.4 and 215.2 grains.¹⁵⁷ Sydenham gives the weights of nine drachmae, of thirty-three didrachmae, and of one tridrachma from Caesarea that average 50.5, 95.4, and 143.5 grains respectively.¹⁵⁸

In Persia 72 tetradrachms and 10 drachmae issued by Volagases II (A.D. 78/147) average 11.09 and 3.64 grams respectively.¹⁵⁹

The silver coins issued at Amisus by Hadrian for himself and in the names of various members of his family show the following distribution.¹⁶⁰ The

het, *Musée Crozatier*, ii; Edwards, Yale Coll.; Cardoso, *Buenos Aires*; Naville, Sales 2, 17; Helbing Sale of Oct. 24, 1927; Amer. Numis. Soc.; *Num. Chron.*, 1931, 164; *Fundber. Schwaben* (1913, 86) gives four that average 3.16.

¹⁵⁷ Hunter Coll. gives 194.9 grains; Egger Sale 46 gives 6.42, 6.25, 6.32, 6.73; Ciani Sale of Apr. 28, 1925 gives 14.42, 13.47, 13.70, 13.87, 12.35.

¹⁵⁸ In addition Ratto Sale of Mar. 4, 1927 gives 10.61, 6.29, 3.29.

¹⁵⁹ BMC.; Naville Sale 12; *Sammlung Petrowicz*; Prokesch-Osten, *op. cit.*

¹⁶⁰ The weights are from Fitzwilliam; Hunter; Weber; BM Cat.; *Rec. Gen. As. Min.* (Waddington); Jameson; Cahn, Sales 65, 71, 75; Grabow; Schlessinger Sale 11; Hirsch Sale 25; Ciani Sale of Apr. 28, 1925; Dieudonne; E. T. Newell.

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tridrachmae and the tetradrachms are not included in this tabulation:¹⁶¹

Weight in grains	Number	Weight in grains	Number
31	3	42	11
32	6	43	15
33	3	44	23
34	7	45	12
35	5	46	13
36	6	47	5
37	8	48	3
38	15	49	0
39	14	50	7
40	13	51	2
41	22		

As was the case with the denarii, this table shows no well-defined point of concentration. It will be noticed that the coins are considerably lighter than the weight of the contemporary denarii.

The weights of the aureus and denarius indicate a ratio between gold and silver of 1 : 11.26.

An analysis of three denarii given by Mattingly shows 85.7, 80.57, and 75.1% of silver. Hammer¹⁶²

¹⁶¹ These weights are:

grains	nos.	grains	nos.	grains	nos.
102	1	120	1	135	1
111	1	121	2	136	1
112	1	126	1	139	1
115	1	127	4	144	1
117	1	128	2	145	2
119	1	129	1	162	1
		132	2		

¹⁶² Hammer, 98.

gives an analysis of nine denarii, one with 91.5, three with 86.7, two with 82.4, one with 81, and two with 80.9% of silver. Ondrouch¹⁶³ gives one each with 84.9 and 84.7% of silver and one coin of Sabina with 92% of silver.

The inscription from Pergamum,¹⁶⁴ to which reference has just been made, illustrates the difficulties faced by merchants and bankers due to the different monies that were current: “. . . I commanded them to appear in order that they might have opportunity to say what they wished. Their manner of exchange was illegal, and they permitted themselves to act unjustly and against their agreement. For although they should have accepted eighteen asses per denarius from the merchants, small dealers, and food dealers, who are accustomed to trade for small bronze coins, and should have paid seventeen asses to those who wished to exchange denarii, they were not satisfied with the exchanging of asses, but even in cases where a man bought food for silver denarii, exacted an as for each denarius. I have therefore decided that it would be well for me to correct this for the future so that they may not make collections from purchasers which they have no permission to receive. In the case, however, of food sold by weight, the price of which is set by the market-masters, I think it right that even those who purchase several mina's worth should pay the

¹⁶³ *Vyskovce*, 11; Hammer (*op. cit.*, 112) gives a tetradrachm of Caesarea with 64.1 and one of Alexandria with 16.5% of silver.

¹⁶⁴ *Athen. Mitth.*, 1902, 78; Dittenberger, *OGIS.*, II, 484; the translation given here is that in *Econ. Survey* IV, 893 with certain changes.

price in bronze coinage so as to preserve for the city the revenue from the exchange; so too, where several appear to join together in an agreement to make a purchase in silver denarii, and then to divide their purchases, they should pay the dealer in small bronze, so that he may bring it to the banker's table; and they shall pay at the rate of seventeen asses, since the traffic in exchange is supposed to refer to the merchants only. . . ."

This inscription re-affirms the exchange rate of the imperial denarius by the local bank: purchase at 17 asses, sale at 18 asses, thus giving a profit of about 6% on each denarius handled. Hadrian seems to have decided that buyers must offer bronze when purchasing those classes of foodstuffs, the price of which had been fixed by the market masters, thus increasing the business of the money-changers.

It is interesting to note that a contemporary section of the Digest¹⁶⁵ provides that law suits brought by bankers, or brought against them, were to be tried by the prefect. Perhaps there were other cases similar to that at Pergamum.

A contemporary inscription¹⁶⁶ speaks of a gift of one denarius to each citizen of Beneventum, while one from Rome¹⁶⁷ provides gifts of three to five denarii to guild members. Another Pergamene inscription mentions denarii¹⁶⁸ in amounts from one

¹⁶⁵ Digest, i, 12, 14, 2.

¹⁶⁶ CIL., ix, 1619 from Beneventum.

¹⁶⁷ CIL., vi, 33885. Also CIL., xiv, 4743 (A.D. 129) from Ostia.

¹⁶⁸ IGRR., iv, 353.

to one hundred. An inscription from Thyatira¹⁶⁹ mentions a gift of 1500 "silver denarii." An endowment from Aphrodisias¹⁷⁰ had a capital of 264,179 denarii. A fragmentary inscription from Athens,¹⁷¹ which may or may not belong to this period and which bears some resemblance to the alimentary grants of the previous reign, is believed by Mommsen and subsequent commentators to show that one denarius was equal to six drachmae. This is hardly probable, much less certain, and unfortunately the date is far from definite.

The Palmyrene customs dues were payable in denarii.¹⁷² The well-known inscription from Rhodiapolis¹⁷³ shows that in A.D. 131 Opramoas gave 15000 denarii to pay the cost of exchanging money at a festival, while under Hadrian and Pius he gave away more than 350,000 denarii.

A document from Dura dated A.D. 134¹⁷⁴ speaks of "100 drachmae of good silver of the Tyrian standard," while one from Jebel Halakah¹⁷⁵ dated A.D. 120 mentions 1500 denarii as the cost of a wall.

¹⁶⁹ IGRR., iv, 1281 probably of Hadrian. Another Thyatira inscription, *ibid.*, 1275, (A.D. 127 or 183) mentions denarii. IGRR., iii, 648 from Idebessus mentions 1500 denarii as a penalty for violation of a grave.

¹⁷⁰ Laum, *Stiftungen*, no. 102. Another from Magnesia is mentioned in no. 125.

¹⁷¹ *Inscript. Graecae*, 2nd Ed., ii, 2776; *Hermes*, 1871, 129.

¹⁷² IGRR., iii, 1056.

¹⁷³ IGRR., iii, 739. *Econ. Survey*, iv, 887 seems to miss the point when it says: "Opramoas made a gift of 500 dr. to change the federal coinage of Lycia, though in what way remains a question as the coinage was not changed."

¹⁷⁴ Dura, vi, 425.

¹⁷⁵ Prentice, *Gk. and Latin Inscr.*, 104; *Hermes*, 1902, 91, no. 5.

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It is interesting to note that a similar inscription from the same place some forty years earlier spoke of drachmae.

The mining regulations of Vipascum¹⁷⁶ mention denarii as the monetary unit. A wax tablet from Dacia¹⁷⁷ mentions twenty denarii, while a similar document from Ravenna¹⁷⁸ preserves a contract for the sale of an imported slave for 625 denarii. Aurei are mentioned¹⁷⁹ in a section of the Justinian Code.

TABLE S
HADRIAN AUREI

Grains	117/8	119/22	125/28	128/32	132/34	134/38	Sabina
98							
99							
100	1						
101							
102							
103		1				2	1
104						1	1
105	1	2		1		1	
106	1		1		1	4	5
107	1	2	1	3	2	8	1
108	1	9	7	4	2	15	7
109	7	18	8	2	1	24	7
110	12	23	13	5	5	34	9
111	14	32	33	10	2	42	2
112	1	26	10	5	2	25	7
113	8	13	6	3	1	21	5
114	1	3	5	1	1	15	2
115	3	3	1	1		8	
116			2	1		4	
117							1
118						2	

¹⁷⁶ CIL., ii, 5181.

¹⁷⁷ CIL., iii, p. 954 (A.D. 131).

¹⁷⁸ *Zeitsch. Savigny Stiftung*, xlii, 452 (Hadrian or Plus). Digest xxi, 1, 31, 21 provides that the nationality of the slave must be given in a sales contract.

¹⁷⁹ vii, 4, 2. *Vita Hadr.*, 7, 3 also mentions aurei. A Latin papyrus of A.D. 128 (Winter, *Misc. Papyri*, 166) mentions 375 sesterces.

ANTONINUS PIUS

While the 758 aurei of Pius and of the various members of his family show the same point of concentration as under Hadrian, namely 111 grains (7.19 grams), the accuracy in minting seems somewhat improved, for over 80% of the total number of coins fall within a range of 109 to 113 grains.¹⁸⁰

The average weight of 111 denarii found in various catalogues is 49.14 grains (3.19 grams).¹⁸¹ On this basis the ratio of gold to silver is 1 : 11.49. Sydenham gives the weights of ten didrachmae and of four drachmae from Caesarea that average 94.1 and 48.7 grains respectively.¹⁸²

Analyses of denarii show the following results: Hammer¹⁸³ gives one coin each with the following

¹⁸⁰ Hultsch (*Metrol.*, 306) says 7.27 to 7.21 grams.

¹⁸¹ Edwards (Yale Coll., 96) gives 3.17, 2.99, 3.48, 3.07, 3.7, 2.98, 3.27, 2.91, 3.2, 3.0, 3.03, 2.98, 2.9, 3.46, 2.92, 3.26, 3.35, 3.25, 3.24, 3.15, 2.82, 3.11 and for Faustina senior: 3.01, 3.09, 3.07, 2.81, 3.08, 3.22, 2.85, 3.15, 3.47; *Num. Zeit.* (1914, 228) gives 3.57, 3.24 and for Faustina: 3.31, 3.32; Cardoso gives 3.5, 3.5, 3.2, 3.2, 3.0, 3.0, 3.0, and for Faustina: 3.5, 2.7, 3.2, 3.0; Montelhet (*Musée Crozatier*, ii, 133) gives 3.45, 3.21, 3.02, 2.99, 2.92, 3.18, 3.48, 2.83, 2.39, 3.06, 3.27, 3.16, 3.33, 3.87, 3.28, 3.46, 3.38, 2.83, 3.02, 3.11, 3.15, 3.15, 2.95, 3.20, 3.25, 3.24, 2.73, 3.13, 3.21, 3.47, 2.87, 2.85, 3.43; Helbing Sale of Oct. 24, 1927, gives 3.3; *ibid.* Sale of Apr. 4, 1927, gives 3.5, 3.8, 3.3; Princeton Univ. has 2.90, 3.39, 3.30, 3.05, 2.64, 3.26, 3.47, 3.27, 2.91, and for Faustina: 3.12, 2.99, 3.67, 3.60, 3.3, 3.01, 3.06; Amer. Num. Soc. has 3.17, 3.54, 3.42, 3.05, 3.21, 3.55, 3.25, 3.42 and for Faustina: 3.40, 3.56, 3.34, 3.35; *Num. Chron.* (1931, 164) gives 53, 46.9, 54, 51.2, 51.6 grains. *Fundber. Schwaben* (1913, 86) gives 19 that average 3.146. BMC. (iv, xiv) gives 783 that average 3.23.

¹⁸² In addition Egger Sale 46 gives 5.81, 5.63, 6.78; Ratto Sale of Apr. 4, 1927, gives 5.74, 3.26.

¹⁸³ Hammer, 99.

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percentages of silver: 93.3, 81.3, 80.0, 78.3, 76.7, 74.8, 70.2 and of the coins of Faustina the Elder, one each with 92.4, 85.8, 81.3, 79.6, 77.3, 73.0%. On-drouch¹⁸⁴ gives one each with 81.4, 78.1, and 77.8% of silver.

An analysis of the weights of denarii given in the B. M. Catalogue and other sources shows the following results:

Grains	Pius	Faustina
36 and less	4	2
38	2	2
39	2	1
40	3	2
41	10	2
42	14	5
43	20	6
44	32	7
45	25	10
46	52	17
47	72	24
48	63	22
49	82	28
50	80	17
51	77	30
52	58	22
53	77	22
54	36	12
55	15	10
56	8	7
57	5	8
58	2	1
59	3	1
60 and over	1	1
Total	743	259

¹⁸⁴ Vyskovce, 11.

If there is a point of concentration here, it is somewhere between 53 and 49 grains. There seems to be no indication of two standards here but rather an *al marco* coinage at about 100 pieces to the pound.

A section of the Gnomon of the Idios Logos¹⁸⁵ prohibits the exchange of a gold or silver coin for more subsidiary copper coins than its legal value. While our copy of this document is dated A.D. 149, this particular section may be older. At any rate it presupposes a fixed ratio between the coins.

Various inscriptions speak of money. One of A.D. 141¹⁸⁶ mentions a gift of one denarius to each citizen; another, from Auximun,¹⁸⁷ of a gift of three denarii to each of the *decuriones* and of two denarii to each of the *augustales*. An inscription from Strongoli¹⁸⁸ mentions a capital gift of 100,000 sesterces, the income from which was to be distributed as denarii. Another¹⁸⁹ speaks of gifts of one to six denarii on various occasions. A papyrus of A.D. 151 mentions 350 denarii.¹⁹⁰ A Spanish inscription¹⁹¹ of A.D. 147 speaks of gifts of one denarius each to the inhabitants of Salpensa. One from Thyatira¹⁹² mentions 1500 denarii.

¹⁸⁵ Section 106. The word *nomisma* which is used means silver certainly and gold probably.

¹⁸⁶ CIL., xiv. 8 of Ostia.

¹⁸⁷ CIL., ix, 5823 (A.D. 159); also xiv, 4554 (A.D. 166).

¹⁸⁸ Desseau, 6468. CIL., xiv, 353 is similar in its use of sesterces for the capital and denarii for the interest though here part of the money is given to guilds and not to individuals. See also xiv, 4642.

¹⁸⁹ CIL., vi, 10234 (A.D. 153).

¹⁹⁰ BGU., 887 as the price of a slave.

¹⁹¹ CIL., ii, 1282.

¹⁹² IGRR., iv, 1291. Denarii are also mentioned, *ibid.*, iii, 1010 from Kara.

Two of the Dacian wax tablets seem to give a relationship between gold and the denarius. One, dated May 6, 142,¹⁹³ seems to equate two ounces with 600 denarii; the other, dated October 4, 160,¹⁹⁴ seems to equate two ounces with 420 denarii. It does not seem possible, however, to assume that the expression "pro uncis duabus" that is found on both tablets actually refers to gold.¹⁹⁵ Unfortunately this expression is not used similarly in any other place, but in spite of this lack, it seems much more likely that it refers to some import tax on slaves, and that it has no connection at all with the denarii that are mentioned immediately after.

There are two other contemporary tablets which are not in reasonable accord with any extremely low valuation of the denarius at this time; one records¹⁹⁶ the sale of one-half of a house for 300 denarii, the other¹⁹⁷ records a list of expenditures where fractions of a denarius are mentioned. Lucian¹⁹⁸ tells a story of a trusting buyer who paid thirty gold pieces for a forged rare book priced at 750 drachmae. Basing his

¹⁹³ CIL., iii, p. 940.

¹⁹⁴ CIL., iii, p. 959.

¹⁹⁵ Appleton in *Studi in onore do V. Scialoja* (not accessible to me) says that the two ounces do not refer to gold but equals one sestertertium or four asses. The editors of the CIL say that the two ounces on p. 959 equal 166 $\frac{3}{4}$ denarii which is a mathematical error. There is another contract for the sale of a slave on p. 936, dated March 17, 139 which makes no mention of this phrase: "pro uncis duabus."

¹⁹⁶ CIL., iii, p. 944 dated A.D. 159.

¹⁹⁷ CIL., iii, p. 953. Documents on pp. 948, 950 (A.D. 163, 164 and 167) also speak of denarii and one speaks of 5 sesterces as a daily wage.

¹⁹⁸ *Pseudologistes*, 30.

TABLE T
ANTONINUS PIUS AUREI

Grs.	138/9	139/41	140/3	143/4	145/6	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	no date
96																					
97																					
98			1											1							1
99																					1
100			1					2			1										
101																					
102					1																
103																					
104																		1			
105	2	1			1										1						1
106	1		1	1	2			1			1										2
107	3		4					2		1											3
108	3	2	9	1	2																16
109	3		6	3	12			4	4		2	1		4		1			3		29
110	3	1	4	1	8			3	3	8	8	2	3	2	3	3	2	3	1		29
111	10	3	15		16			1	7	15	18	14	9	3	9	9	5	10	15	1	80
112	3	1	9		10			2	11		6	1	8	4	2	5	7	6	10	5	46
113	2	1	7		5			2	2		5	1	4	2	1	2	1				4
114	2		3	1	4						3	1			2	2					33
115			2		2			3	1						1						14
116	2		1		1					1											2
117																					2
118																					1
119																					
120																					

calculation on the fact that the denarius contained only 70% silver, Kubitschek¹⁹⁹ obtains a ratio between gold and silver of 1 : 8.2 from this story. If he had disregarded the amount of alloy he would have found a ratio of about 1 : 10.75. This is to be compared with the ratio of 1 : 11.49 obtained from the weights given in the present paper.

MARCUS AURELIUS

The 578 aurei of Marcus Aurelius and of the various members of his family show a point of concentration at 111 grains (7.19 grams). The coins display an exceptional quality of technical skill in minting, for over 95% fall within a range of 109 to 113 grains.²⁰⁰

The average weight of 100 denarii that appeared in catalogues and elsewhere before the publication of Vol. 4 of the British Museum Catalogue is 49.38 grains (3.20 grams).²⁰¹ Using these figures as a basis, the ratio of gold to silver is 1 : 11.12.

¹⁹⁹ *Quinquennium*, 103.

²⁰⁰ Hultsch (*Metrol.*, 306) says 7.25 grams from Aurelius to Septimius. The figure of 95% is due largely to the fine condition of coins in the particular hoards that furnish the bulk of our information.

²⁰¹ Edwards (Yale Coll., 99) gives 3.67, 3.3, 2.98, 2.75, 3.48, 3.38, 3.07, 3.18, 2.81, 3.05, 2.68, 3.71, 3.45, 2.83, and for Faustina junior: 3.2, 3.28, 3.44, 3.35, 3.33, 2.8, 3.01, and for L. Verus: 2.88, 3.38, for Lucilla: 2.99, 3.17, 3.07, 2.74, 3.41; *Num. Zeit.* (1914, 228) gives 3.20, 2.83, 3.20 for Faustina; 2.85, 2.63 for Verus; and 3.44, 3.24 for Marcus; Cardoso (*Buenos Aires*, 183) gives 3.0 for Marcus as Caesar; 3.5, 3.2, 3.0, 3.0 as emperor; 3.0, 3.2, 3.7, 3.2, 3.2 for Faustina. Montelhet (*Musée Crozatier*, ii) gives 3.48, 2.89, 2.57, 3.68, 3.12, 2.63, 3.30, 3.32, 3.44, 3.22, 3.30, 3.19, 3.02, 2.86, 3.37, 2.89, 3.49, 3.03, 3.02, 2.62; Naville Sale 2 gives 3.21; Helbing Sale

Grains	Marcus	Faustina	Lucilla
36	3	1	
37	5		
38	3	1	
39	5	1	2
40	9	4	
41	3	2	1
42	12	3	2
43	26	7	3
44	37	6	1
45	18	5	3
46	43	7	5
47	32	10	5
48	50	6	4
49	67	19	3
50	56	17	3
51	76	18	5
52	68	18	8
53	52	11	5
54	32	3	4
55	9	2	1
56	16	4	
57	10	1	1
59			1
60	2		
over 60	2	1	
Total	636	147	57

of Apr. 12, 1927, gives 3.9, 3.5, 3.6, 3.4; Helbing Sale of Oct. 24, 1927, gives 3.2; Princeton Univ. has 3.14, 3.12, 3.29, 3.40, 3.39, 2.90, 3.38, 3.43, 2.91, 3.51; and for Faustina: 2.94, 2.86, 3.16, 3.47, 3.23, and for Verus: 3.17, 3.65, 3.29; Amer. Num. Soc. has 3.37, 3.36; of Faustina: 3.39, 2.91, 3.34, 3.45, 3.27, 3.31, 3.41, of Verus: 3.39, 3.32, of Lucilla: 3.41; *Viestnika Hrv. Arheol. Društva* (1900, 6) gives 2.67; *Fundber. Schwaben* (1913, 86) gives an average of 3.09 for ten, and of 3.05 for four of Faustina; BMC. (iv, xiv) gives 3.21 (49.58 grains) as the average of 639; *Num. Chron.* (1931, 164) gives 46.4, 50.5, 42.5, 51.3 and for Commodus 45, 57.6, 44.6, 34.4 grains.

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Using the weights given in the B. M. Catalogue and other sources a frequency table shows the results in table on p. 103. In the column headed Marcus appear denarii issued in the name of L. Verus and of Commodus as Caesar.

This also looks like *al marco* coinage at about 100 to the pound. Using 51 grains as the point of concentration, the ratio of gold to silver is 1 : 11.49.

The British Museum Catalogue gives the weight of one Syrian tetradrachm as 197.8 grains, while Sydenham gives the weights of thirty-two didrachmae and of one tridrachma from Caesarea that average 100.1 and 153.3 grains respectively.²⁰²

In Persia 143 tetradrachms and 26 drachmae issued by Volagases III (A.D. 147/191) average 12.36 and 3.45 grams respectively.²⁰³

Hammer²⁰⁴ gives an analysis of ten coins of Marcus, one with 93.6, and nine with 74.5% of silver. Two coins of Faustina the Younger have 72.1 and one has 70.5% of silver.

The analysis of silver hoards buried up to the time of Alexander Severus (see Table Q) seems to make clear that Marcus made no consistent effort, if indeed he made any, to call in older coins that

²⁰² In addition Egger Sale 46 gives 6.68, 6.24, 5.48, 6.06; Ratto Sale of Apr. 4, 1927, gives 6.86, 6.35, 6.09, 7.02; Ciani Sale, 1925 gives 5.85.

²⁰³ BMC.; Naville Sale 12; Prokesch-Osten, *op. cit.*; Markoff, *op. cit.*; *Rev. Num.*, 1898.

²⁰⁴ Hammer, 99. *Klio*, xxvi, 97; Mickwitz, *Geld*, 33; and Mattingly, *Roman Coins*, 125, all assume a 25% debasement. There is a sudden large debasement about the middle of the reign in the Alexandrian coinage, but this was not continued throughout the reign or in the succeeding reigns.

might be better than his own. It is clear, however, that the silver coinage suffered a depreciation of over 6% during the reign, due perhaps to extraordinary demands made on the government because of earthquakes, pestilence and war. It is said to be the first depreciation of the coinage made to help the government at the expense of its citizens.²⁰⁶ Whether this idea is right or not depends upon the answer to an apparently unanswerable question—whether the government was still willing to exchange twenty-five denarii for an aureus. If it still did so, then the government saved in its cost of minting silver and no one was hurt financially at the time by the move. If the government was unwilling to make that exchange, then the added amount of debasement was equivalent to a capital levy.

It has been said²⁰⁶ that after Marcus Aurelius the Empire rapidly grew poorer and that the mint ceased to coin gold with any freedom. While the first statement may be true, the second does not rest upon a sufficient basis of fact, for the numismatic evidence shows no great diminution in the issues of gold under the succeeding emperors.

There are numerous contemporary references to the denarius. At Bovillae²⁰⁷ a gift was made to the *adlecti scaenicorum* of twenty-five denarii, to the *decuriones* of five denarii, to the *augustales* of three denarii, and to the citizens generally of one denarius.

²⁰⁶ Mickwitz, *Geld*, 33.

²⁰⁶ *Num. Chron.*, 1916, 43.

²⁰⁷ CIL., xiv, 2408 (A.D. 169).

At Gabii²⁰⁸ a principal sum of 10,000 denarii was given, the interest from which was to provide an annual banquet. Among the Dacian wax tablets²⁰⁹ is one recording a loan of 60 denarii. In a decree²¹⁰ for reducing the cost of gladiatorial shows there is mention of aurei and of sesterces but no relation between them is shown.

An inscription from Tira²¹¹ mentions 250 "silver denarii," while at Amasia²¹² 10,000 denarii are specified as a fine for violation of a grave. A military account from Egypt, dated about A.D. 180, shows denarii, obols and semisses, with the denarius equal to twenty-eight obols.²¹³

In a second Spanish inscription²¹⁴ a gift of 7500 denarii is mentioned; this was to be loaned at six percent, and the income was to provide 250 denarii for a spectacle and 200 denarii for oil. An inscription from Volcii²¹⁵ records a gift of three denarii to the *decuriones*, two to the *augustales*, and one to the general populace. A large endowment from El Kef²¹⁶ mentions a capital sum of 1,300,000 sesterces, whose income, amounting to 16,250 denarii (a rate of 5%), was to be used in the education of boys and girls.

²⁰⁸ CIL., xiv, 2795 (A.D. 168).

²⁰⁹ CIL., iii, p. 934 (Oct. 20, 162).

²¹⁰ CIL., ii, 6278 from Italica.

²¹¹ IGRR., iv, 1662 (A.D. 175). An endowment at Gythium is given in denarii: Laum, *op. cit.*, no. 9.

²¹² IG., iii, 104. In *ibid.*, iv, 803 from Apamea 500 denarii are mentioned as the penalty.

²¹³ *Fayum Towns*, 105.

²¹⁴ CIL., ii, 4514 from Barcino.

²¹⁵ CIL., x, 416 probably of this period.

²¹⁶ CIL., viii, 1641.

TABLE U
MARCUS AURELIUS AUREI
Faust.
Jun.

Grains	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	Lucilla	Jun.
98																						
99																						
100																						
101																						
102																						
103																						
104																						
105																						
106																						
107																						
108																						
109																						
110																						
111																						
112																						
113																						
114																						
115																						
116																						
117																						
118																						

A papyrus of A.D. 166 mentions the sale of a slave for 200 denarii.²¹⁷ Three of the Dacian wax tablets²¹⁸ mention denarii, while one mentions a daily wage of five sesterces. In an inscription from Stobi,²¹⁹ twenty-five myriads of denarii are mentioned, an amazing figure if the inscription is correctly dated.

A document from Dura²²⁰ dated A.D. 180 mentions 500 silver drachmae of the Tyrian standard. An inscription from Iobacchi²²¹ mentions sums of 25 and 50 denarii, while one from Eumeneia mentions²²² 3712 drachmae. A section of the Digest²²³ gives the hypothetical value of a slave as ten aurei, which is two aurei higher than the actual price given above. The well-known letter written by the Tyrians in Puteoli in A.D. 174 mentions 250 denarii.²²⁴ Aurei are mentioned by Dio Cassius.²²⁵

COMMODUS

The comparatively few aurei that may be dated to the sole reign of Commodus, seventy-nine in

²¹⁷ PBM., 229; Meyer, *Jur. Pap.*, 37. In addition to the 200 denarii there was a "capitulatio portitorio" to be paid. Perhaps this is to be considered the same as the "pro uncis duabus" found on Dacian wax tablets under Pius. Grenfell, *New Class. Frag.*, ii, 108 (a Latin document) mentions denarii.

²¹⁸ CIL., iii, pp. 948, 950 (A.D. 163, 164 and 167).

²¹⁹ Frey, *Corp. Inscr. Judaicarum*, 694 and said to be dated in A.D. 165.

²²⁰ Dura, vi, 429.

²²¹ Dittenberger, IGS., 1109 (before A.D. 178).

²²² *Mon. As. Min. Antiq.*, iv, 333 (A.D. 173).

²²³ xxi, 2, 21. *Vita Marci*, ii, 4 also mentions aurei.

²²⁴ IG., xiv, 830.

²²⁵ Dio, lxxi, 32, 1.

number, show a point of concentration at 112 grains (7.26 grams), and a quality of workmanship nearly equal to that found under Marcus, for 90% of the coins fall within a range of 110 to 114 grains.

The average weight of 325 denarii is 44.89 grains

Grains	Commodus	Crispina
36 or less	25	
37	14	
38	4	
39	11	1
40	16	
41	21	1
42	23	
43	13	4
44	24	5
45	25	1
46	13	3
47	11	1
48	15	1
49	11	4
50	14	3
51	14	1
52	11	2
53	9	
54	11	2
55	2	1
56	3	
57	1	
58	1	
59	2	
60		
61 and more	<u>1</u>	<u> </u>
Total	295	30

(2.91 grams).²²⁶ Results are given in a frequency table on p. 109.

The badly defined point of concentration here is at 45 grains, but as before, one can perhaps assume *al marco* coinage at about 100 to the pound.

The British Museum Catalogue gives the weights of two Syrian tetradrachms as 136.6 and 192 grains,²²⁷ while Sydenham gives the weights of thirteen didrachms and two tridrachms of Caesarea that average 70.1 and 139.9 grains respectively.²²⁸

Hammer gives an analysis of ten coins: five with 72, four with 71 and one with 67.1% of silver. These figures indicate a further depreciation from the time of Marcus of between 5 and 6%.

The increase in the weight of the aureus and the pronounced and apparently temporary decrease in the weight of the denarius (provided it is not due to the small number of coins for which weights could be found) indicates either a change in the ratio of gold to silver, or a revaluation of the denarius in terms of the aureus. If one assumes that

²²⁶ Edwards (Yale Coll., 102) gives 3.33, 2.45, 2.34, 2.64 and for Crispina 3.01; *Num. Zeit.* (1914, 228) gives 2.29 and for Crispina 2.83; Montelhet (*Musée Crozatier*, ii, 192) gives 2.80, 2.90, 2.59, 2.72, 3.35, 2.78, 2.72, 2.32, 3.13, 2.55, 2.45; Helbing Sale of Oct. 24, 1927, gives 3.2; Princeton Univ. has 2.92, 2.97, 2.64, 2.10, 2.43, 2.86, 3.29, 2.73 and for Crispina 3.28, 2.87; Amer. Num. Soc. has 3.23 and for Crispina 3.50, 3.38. *Fundber. Schwaben* (1913, 86) gives 13 that average 2.663; BMC (iv, xiv) gives 290 that average 45.22 grains (2.93 grams); *Viestnika Hrv. Arheol. Društva* (1900, 10) gives one at 2.83.

²²⁷ Hunter Coll. gives 173.4.

²²⁸ In addition Egger Sale 46 gives 6.32. Some of the weights given by Sydenham indicate tetradrachms rather than "tridrachms" as stated.

the old ratio of 25 denarii to one aureus still held good, then the ratio of gold to silver is 1 : 10.02. If however, one assumes that Commodus revalued the denarius by making an aureus worth 30 denarii, then the ratio of gold to silver is 1 : 12.02, approximately what it had been at the beginning of the imperial period.

Apuleius²²⁹ whose writings may perhaps be dated to this period, mentions sesterces, denarii and aurei, in one place pricing donkeys at 11 and 17 denarii, low prices for average animals. He also uses two curious expressions "aureos solidos" and "aureos folles" which elsewhere are not known before the fourth century. Are these interpolations in the text? If so, they seem to have been unnoted by the commentators.

Among other contemporary references to money may be mentioned an inscription from Ostia²³⁰ recording not only a capital gift which is stated in sesterces but also a sportula of five denarii each to the *decuriones* and to the *augustales*. There are two inscriptions²³¹ from Anagnia reporting separate identical gifts of five denarii to the *decuriones*, two to the *sevirs* and one to the citizens generally, at the dedication of the baths.

An inscription from Sagalassus²³² records a gift of 13,000 denarii, while at Oenoanda 10,000 denarii

²²⁹ *Metam.*, ii, 13; iv, 9; ix, 18; *Apol.*, 42, 97.

²³⁰ CIL., xiv, 367 (A.D. 182). CIL., viii, 6948 from Cirta also mentions capital in sesterces and income in denarii.

²³¹ CIL., x, 5917, 5918.

²³² IGRR, iii, 351. An endowment at Aphrodisias had a capital of 12600 denarii: Laum, *op. cit.*, no. 101.

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are mentioned as the penalty for violation of a grave.²³³ An African inscription²³⁴ estimates the value of a slave as 500 denarii. A contemporary papyrus mentions denarii,²³⁵ while another speaks of two denarii, eight obols.²³⁶

The mention of such sums as 1, 2 and 5 denarii seems conclusive evidence that marketwise this coin still had real purchasing power.

TABLE V
COMMODUS AUREI

Grains	Commodus	Crispina
97		1
98		
99		
100		
101		
102		
103		
104		
105		
106		
107		1
108	1	1
109	4	
110	5	2
111	17	7
112	20	5
113	9	6
114	1	

PERTINAX

The forty-three aurei of Pertinax show a point of concentration at 111 grains (7.19 grams) with 93%

²³³ IGRR., iii, 500.

²³⁴ CIL., viii, 23958, 14.

²³⁵ P. Princeton, 27 (A.D. 191/192).

²³⁶ Wilcken, *Gk. Ost.*, 1265 (A.D. 187).

of the coins falling within a range of 109 to 113 grains. In very few places are weights given for the denarius. The few that have been found indicate an average of 48.14 grains (3.12 grams).²³⁷

Hammer²³⁸ gives an analysis of two silver coins, one each with 90 and 62% of silver.

DIDIUS JULIANUS

The seventeen coins of this reign show a decided drop in weights. The point of concentration is found at 103 grains (6.67 grams), with 82% of the coins falling within a range of 101 to 105 grains.

TABLE W
PERTINAX AND JULIANUS AUREI

Grains	Pertinax	Julianus
91		1
101		1
102		2
103		7
104		2
105		2
106		2
107		
108	2	
109	3	
110	8	
111	15	
112	13	
113	1	
114	1	

²³⁷ Edwards (Yale Coll., 103) gives 3.19, 3.08; Naville Sale 2 gives 3.36, 3.07, 3.17, 3.40, 2.61, 3.02; Helbing Sale of Oct. 24, 1927, gives 2.75, 3.05, 2.6; Princeton Univ. has 3.64; Amer. Num. Soc. has 3.60.

²³⁸ Hammer, 100.

Judging from very few examples the average weight of the denarius²³⁹ is 44.18 grains (2.86 grams). Hammer gives the analysis of one denarius with 81% of silver.

Judging from the coins, and assuming that an aureus was worth 25 denarii, the ratio between gold and silver is practically the same for the two reigns. Under Pertinax it is 1 : 10.84 while under Didius it is 1 : 10.72.

SEPTIMIUS SEVERUS

The 523 aurei issued by Septimius for himself and in the names of various members of his family show a point of concentration at 111 grains (7.19 grams). Over 75% of the coins fall within a range of 109 to 113 grains.²⁴⁰ The average weight of the denarius, to judge from 257 coins, is 48.39 grains (3.14 grams).²⁴¹ The average weight of fifty-four denarii of Septimius found at Müttersholz²⁴² is given as 3.2 grams, of thirty denarii of Julia Domna as 3.38 grams, and of fourteen denarii of Geta as 3.6 grams. Weights of the denarii of Septimius, as far as they

²³⁹ Naville Sale 2 has 2.56, 2.84, 2.75, 3.19; Amer. Num. Soc. has 3.02, 2.82.

²⁴⁰ See *Num. Zeit.*, 1933, 17 for coinages of Septimius, Caracalla, Geta and Macrinus. Despaux, *Les devaluations monétaires* says Septimius reduced the aureus from 7.40 to 7.28 grams.

²⁴¹ The table includes coins from Edwards, Yale Coll., 104; *Num. Zeit.*, 1914, 228; *Viest. Hrv. Arheol. Društvo*, 1900, 6f; Naville, Sale 17; Helbing, Sale of Oct. 24, 1927; Princeton Univ.; Amer. Num. Soc.; *Num. Chron.*, 1931, 164, 1939, 42; B.J., 111/112, 419. *Fundber. Schwaben* (1913, 86) gives 107 that average 3.01 and 10 of Geta that average 2.90.

²⁴² *Bull. Soc. pour conserv. Mon. Histor. d'Alsace*, 1926, 129.

are available, may be shown in tabular form as follows:

Weight in grains	Number	Weight in grains	Number
39 or less	12	50	21
40	3	51	29
41	5	52	20
42	2	53	24
43	4	54	12
44	10	55	12
45	10	56	11
46	12	57	5
47	21	58	6
48	21	59	3
49	19	60 or more	2

A very unsatisfactory point of concentration is indicated at 51 grains.

Hammer²⁴³ gives analyses of twelve denarii, two with 75.5, one each with 73.1, 56.9, 56.9, 56.8, three with 55.7, and one each with 54.9, 48.7, 47.4, 43.1% of silver. One coin of Julia Domna shows 45.5% of silver. The average silver content of 57.3% is somewhat better than the 50% of alloy which Septimius is commonly credited with putting in his denarius.²⁴⁴

The British Museum Catalogue gives the weights of seven Syrian tetradrachms of Septimius that

²⁴³ Hammer, 102.

²⁴⁴ *Camb. Anc. Hist.*, xii, 27, 221. These figures seem to be taken to indicate a general debasement of about 50% as in *Klio*, xxvi, 97, Mickwitz, *Geld*, 33, though Mattingly, *Roman Coins*, 125, says about 40% debasement.

average 199.2 grains, and that show a high of 225.3 and a low of 183.7 grains.²⁴⁵ Twenty-one tetradrachms of Caracalla, struck during his father's lifetime, have an average of 200.2 grains with a high of 227 and a low of 154.4 grains. The combined average is 199.96 grains.²⁴⁶

Sydenham²⁴⁷ gives the weights of forty-seven drachmae and of six tridrachmae of Caesarea that average 46.3 and 141.7 grains respectively.

In Persia the average weight of 42 tetradrachms and 14 drachmae struck by Volagases IV (A.D. 191/208) is 11.75 and 3.59 grams respectively.²⁴⁸

Using the actual weights of the aureus and of the denarius, the ratio of gold to silver is 1 : 10.90. As before, this figure is obtained by assuming that an aureus was still worth 25 denarii.

After the time of Septimius, when good denarii²⁴⁹ were difficult to obtain, the free Germans who had been heavy users of Roman silver turned to gold and the increase in the number of gold coins in German hoards of the third century is very noticeable.

After the revolutions that marked his accession, Septimius did not immediately return to a system

²⁴⁵ Hunter Coll. gives 219.7 and for Geta 201.8, 225.5 grains; Naville Sale 17 gives 13.26; Ratto Sale of Apr. 4, 1927, gives 14.12, 9.71; Ciani Sale 1925 gives 12.05, 13.95 grams; *Num. Chron.* (1931, 160) gives 215.2, 204.9, 189, 196.8, 230.3, 215.1, 202.7, 224.8, 221.1, 209.4, 183.6, 218, 221, 216.3, 204.9 grains.

²⁴⁶ These weights are not repeated.

²⁴⁷ In addition Egger Sale 46 gives 2.58, 3.07; Ciani Sale 1925 gives 8.85; Windisch-Graetz gives 3.46; Hamburger Sale 96 gives 2.47.

²⁴⁸ BMC.; Naville Sale 12; Prokech-Osten.

²⁴⁹ *Bull. Correspond. Hell.*, 1896, 523 says the denarius now was only a fiduciary coin.

of centralized coinage, as Vespasian had done in similar circumstances. For example, Septimius had opened a mint for gold at Antioch or Laodicea, and this was not closed until at least A.D. 202.

About A.D. 210 Septimius issued a decree²⁵⁰ proclaiming serious penalties for illicit exchange at Mylasa. Two extracts from this edict may be given: ". . . Decreed by the council and assembly: whosoever, be he freedman or slave, with the exception of the leaseholder and manager of the bank, shall be caught in any way selling or buying currency shall be brought before the banker, after an accusation has been made before the council by any citizen that wishes. If he is convicted before the magistrates and council, but has done it without charging a commission for exchange, the banker and the informer who secured the conviction shall have the right to exact the money from him, the banker having also the right to make exactions from him according to the guarantees (in his lease). If, however, he has charged a commission, a freeman shall pay the most sacred treasury of our most divine lords, the emperors, 500 denarii, the assembly 250 denarii, and the informer who secured the conviction 100 denarii, and the money which he shall be found to have exacted shall be confiscated for the benefit of the banker. . . In very truth, the security of the city is shaken by the malice and villainy of a few people who assail it and rob the community. Through them speculation in exchange has entered the market place and prevents the city

²⁵⁰ *Ibid.*

from securing a supply of the necessities of life so that many of the citizens and indeed the community as a whole suffer from scarcity. And on this account also the regular payment of the taxes to the emperors is delayed." The edict was an attempt to protect the lessees of the bank from losses due to illegal exchange by others. Notwithstanding Reinach and Dittenberger it is not clear that the debasement of the silver currency was the primary reason for the difficulties that the edict sought to correct.

Another document that is sometimes quoted to indicate contemporary distrust of the denarius is one from Palmyra dated A.D. 193²⁵¹ which mentions "old Roman aurei." These coins were carried by a caravan to be used in meeting travelling expenses. Under such conditions gold would be vastly more convenient, due to its smaller bulk and weight. In view of this it seems unlikely that any distrust of the subsidiary coinage can properly be inferred from this document.

On the other hand, there are numerous indications that the denarius was still a coin of real value. An inscription from Perusia²⁵² records a gift of two denarii to the *decuriones* and of one to the *plebs*; another from Rome²⁵³ a gift of two denarii each to fellow members of the donor's guild; another, from Verulae,²⁵⁴ speaks of gifts of four and three denarii

²⁵¹ IGRR., iii, 1050; *Corp. Inscr. Semit.*, 3948. *Vita Severi*, 6.4 also mentions aurei.

²⁵² CIL., xi, 1926 (A.D. 205).

²⁵³ CIL., vi, 85 (A.D. 198).

²⁵⁴ CIL., x, 5796 (A.D. 197). CIL., x, 5064 from Atina (A.D. 208) mentions gifts of 12 sesterces to the *decuriones* and six to the

to various officials and of one denarius to the people. A story in Eusebius²⁵⁶ mentions a monthly wage of 150 denarii. An endowment at Bitburg is said to have had a capital of 50 denarii, possibly a stone cutter's error for 50,000.

A papyrus of A.D. 194 shows that an initiation fee of 100 denarii was paid on joining a well-known athletic association.²⁵⁶ An inscription from Ormela²⁵⁷ mentions both Attic drachmae and the denarius but gives no relationship between them. The Tariff of Zrai,²⁵⁸ dated A.D. 202, gives rates in either asses, sesterces or denarii, and in these rates there is no indication of any depreciation of value for any of these coins. A papyrus of A.D. 197 shows that a fine levied as 250 denarii was paid with 1000 drachmae.²⁵⁹ The papyrus, however, does not show any relationship between gold and silver. An ostraca dated A.D. 205²⁶⁰ mentions seven denarii. Both the *Scriptores Historiae Augustae* and Dio Cassius²⁶¹ mention aurei.

citizens. CIL., xi, 6014 from Sestinum mentions gifts of three denarii to the decuriones and two denarii to the seviri and people generally. See also xiv, 325 add.

²⁵⁶ Eusebius, *Hist. Eccl.*, v, 28, 10.

²⁵⁶ PBM., 1178.

²⁵⁷ IGRR., iv, 887. *Ibid.*, 1282 from Thyatira mentions 2500 denarii, while *ibid.*, iii, 1480 from Iconium mentions 1000 denarii as does *ibid.*, iv, 629 from Traianopolis. *Ibid.*, iv, 758 from Dionysopolis (A.D. 208/9) mentions 2500 denarii.

²⁵⁸ CIL., viii, 4508.

²⁵⁹ P. Achmin, 8.

²⁶⁰ Wilcken, *Gk. Ost.*, 1128.

²⁶¹ *Vita Severi*, 6, 1; Dio, lxxvi, 1.

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TABLE X
SEPTIMIUS SEVERUS AUREI

Grains	Rome 193	East 193	193/6	Laodicea 196/202	Julia 196/211	197	198/202	Antioch 198/201	202/210
100			1						1
101									
102			1			1			
103									
104		1			1		1		1
105						1	4		1
106							5		2
107		1	1				12		5
108			3	3	2		24		8
109	1	1	2	5	4		33		10
110	2	4	6	1	5	1	51		30
111	1	1	18	4	6	8	33	1	43
112		3	12	2	2	4	29		21
113	2	1	3		3	3	19		15
114	1		2		4	3	12		15
115	1				1		4		4
116					1				4
117					1				1
118									2

CARACALLA

The monetary questions connected with this reign are made more difficult of solution because of the small number of coins that may be assigned to the period after the death of Septimius. For the period before A.D. 215, fifty-eight aurei show a point of concentration at 112 grains (7.26 grams), with only 65% falling within a range of 110 to 114 grains. For the period after A.D. 215, twenty-one coins show a point of concentration at 100 grains (6.48 grams), but with only 57% of the coins falling within a range of 98 to 102 grains.

This pronounced change in weights seems successfully to contradict the idea²⁶² that Caracalla did not introduce a new gold standard, and that there was no general reduction in the weight of the aureus. The carelessness of the coinage, however, makes the validity of any deductions less certain than they should be.

The great innovation of Caracalla was the introduction of the coin called, for lack of a better name, the antoninianus, and perhaps intended to replace the denarius.²⁶³ It has been suggested that the antoninianus was rated as one and one-quarter, one and one-half, and two times the denarius,²⁶⁴ though its weight seems to have been fixed at one and one-half times the weight of the denarius. This gives a theoretical weight for the antoninianus of 5.11 grams (79 grains). The actual weights of thirty-

²⁶² *Num. Chron.*, 1916, 41.

²⁶³ Mickwitz, *Geld*, 33.

²⁶⁴ Bernhart, *Handbuch*, 21.

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two antoniniani issued under Caracalla are given in the notes. The average is 77.30 grains (5.01 grams). Of these coins, twelve weigh more than the theoretical weight, the heaviest weighing 5.72 grams; and this is a coin in perfect condition. The silver content is said to have been 55%²⁶⁵ or 50%²⁶⁶. Outside of the *Scriptores Historiae Augustae* there is no mention of this coin in literature, in papyri or in inscriptions. In view of the fact that the coin was struck in vast numbers over a long period of time, this is a very curious fact.

Hammer gives analyses of seven coins struck by Caracalla; five (including two antoniniani) have 62.3% of silver, one has 54 and one antoninianus has 52% of silver.²⁶⁷ The three antoniniani therefore average 58.9% of silver, while the four denarii average 60.2%. This difference is too small to have any significance.

The average weight of nineteen denarii dated between A.D. 211 and 215 is 49.4 grains (3.20 grams), and of thirteen denarii dated after A.D. 215 is 48.9 grains (3.17 grams),²⁶⁸ a difference that again is too

²⁶⁵ *Num. Chron.*, 1919, 134.

²⁶⁶ Giesecke, *Antikes Geldwesen*, 170.

²⁶⁷ Hammer, 102.

²⁶⁸ Edwards (Yale Coll.) gives 2.52, 3.99, 3.15, 2.86, 2.99, 4.12, 2.87, 3.13, 4.83, 3.09, 3.0, 3.43, 2.65, and for Plautilla: 2.95, 3.24; *Num. Zeit.* (1914, 228) gives 3.01, 2.95, 3.09, 2.75, 2.88 and for Plautilla: 2.40, 3.09; *Num. Chron.*, (1939, 42) gives 49.6 grains; Naville Sale 2 gives 2.91, 3.55, 3.35, 2.63, 3.01 for before A.D. 215 and 3.55 after A.D. 215. Naville Sale 17 gives for the period after 215: 2.55, 2.90, and for Plautilla 3.54, 3.13, 3.22, 3.44, 3.88; Princeton Univ. has 3.74, 2.57, 3.11 and for antoniniani: 5.06, 5.23; for Plautilla; 3.51, 3.86, 3.20; Amer. Num. Soc. has for antoniniani: 5.17, 5.18, 5.17, 4.70, 5.26, 5.15, 5.08; E. T. Newell has 5.11, 5.12,

small to have significance. Sydenham²⁶⁹ gives the weights of four drachmae and of four didrachmae of Caesarea that average 48.3 and 85.1 grains respectively. The Syrian tetradrachm seems to have an average weight of 203.2 grains.²⁷⁰

The relation of the aureus to the subsidiary coins after A.D. 215 has been the subject of much dispute. Various suggestions have been made, among them:

1 aureus = 15 antoniniani = 30 denarii

1 aureus = 20 antoniniani = 30 denarii²⁷¹

1 aureus = 12½ antoniniani = 25 minutuli²⁷²

In view of the fact that there seems to be no appreciable difference in silver content between the two coins, it would seem that the relative weights of the antoninianus and of the denarius would have determined the relative monetary value of the two

4.92, 4.51, 4.95, 4.96, 5.17, 4.60, 4.80, 4.86, 5.05, 5.25, 4.87, 4.92, 5.30, 4.85, 5.48, 4.45, 5.72, 5.12, 4.53, 4.79. For denarii issued between 211/215 the Amer. Num. Soc. has 3.05, 3.40, 3.55, 3.16, 2.97, 3.04, 3.39, 2.96, 3.41, 2.99, 2.70, 3.86, 3.28, 3.59 and after 215: 3.19, 2.96, 3.55, 3.25, 3.60, 3.46, 2.82, 3.17, 3.41, 3.12 and for Plautilla: 2.72, 3.37, 3.36, 3.48, 3.41. Naville Sale 17 gives an antoninianus as 4.94; *Bull. soc. pour Cons. mon. hist. d'Alsace* (1926, 129) gives the average of 31 undated coins as 3.07 grams.

²⁶⁹ In addition Windisch-Graetz gives 2.85; Ratto Sale of Apr. 4, 1927, gives 2.96.

²⁷⁰ Egger Sale 46 gives 13.43, 11.95 grams; Hunter Coll. gives 220.9, 213.3, 197.5 grains; Ciani Sale 1925 gives 15.90, 11.30, 13.30, 12.0, 15.80; Ratto Sale of Apr. 4, 1927, gives 15.93, 13.67, 12.44, 11.52, 12.10, 11.28, 12.25, 11.90; Dieudonne gives 15.20, 13.75, 11.60.

²⁷¹ Mattingly-Sydenham, *RIC.*, v, i, 6; Mickwitz, *Geld*, 33.

²⁷² Giesecke *op. cit.*, 170. There seems insufficient evidence to equate the minutulus and the denarius. The former seems to be first mentioned in connection with Alexander Severus.

coins. In other words $1\frac{1}{2}$ denarii were worth one antoninianus. It is difficult to see why one or the other coin would not have gone into the melting pot if a different relationship had been attempted. There is, of course, the possibility that the government might have given some special legal rights to the antoninianus about which we have no extant information, but it is difficult to see where it would profit under those circumstances.

It is interesting to note that in A.D. 215 the temple at Arsinoe²⁷³ was making mortgage loans carrying six percent interest and with the provision that interest payments were to be made in silver. Dio Cassius²⁷⁴ mentions aurei and a contemporary section of the Digest²⁷⁵ gives five aurei as the hypothetical value of a slave. An endowment at Rhodes²⁷⁶ had a capital of 20,000 denarii.

On an inscription from Ambryssus²⁷⁷ sums of 7, 12 and 15 denarii are mentioned, evidence, surely, that this coin still had real values.

It is sometimes said²⁷⁸ that by the time of Caracalla gold was so scarce that it had ceased to be readily interchangeable for silver, or that²⁷⁹ the greater part of the gold coins in circulation consisted of aurei minted under Nero and the rulers of the late first and early second century. There seems little, if any, confirmation for either idea.

²⁷³ BGU., 362.

²⁷⁴ Dio, lxxvii, 10, 2.

²⁷⁵ Digest, xv, 1, 11, 4.

²⁷⁶ Laum *op. cit.*, no. 41.

²⁷⁷ Dittenberger, IGS., 1063 (after A.D. 212).

²⁷⁸ *Num. Chron.*, 1916, 42.

²⁷⁹ Mickwitz, *Geld*, 35.

TABLE Y
CARACALLA AUREI

Grains	210/13	211	212	213	214	215	216/17	No Date
94							1	
95						1		
96							1	1
97						1	3	
98		1					2	
99							4	
100							4	
101						1		
102		1					2	
103							1	1
104							1	
105							1	
106						1		1
107	1							1
108	2							
109	1					2		3
110	3			1	1			
111	1	1				3		1
112	3	1		2		2		4
113	2	1	1	1	1	1	1	1
114	2	1		2		1		1
115	1							

MACRINUS

The eighty-three aurei of Macrinus and of Diadumenius show a point of concentration at 111 grains (7.19 grams), with approximately 70% of the coins falling within a range of 109 to 113 grains.²⁸⁰ Macrinus therefore had abandoned the light weights introduced by Caracalla and had gone back to the standard that had been in general use during the past century.

²⁸⁰ *Num. Chron.* (1916, 41) says that all the aurei of Macrinus weigh between 110 and 112 grains.

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The average weight of thirty-six denarii is 49.17 grains (3.19 grams).²⁸¹ The weight of one antoninianus is given as 5.14 grams.²⁸² Sydenham gives the weights of two tridrachmae of Caesarea as 125.8

TABLE Z
MACRINUS AUREI

Grains	217	218	No date
93			1
94			
95			
96	1	1	
97	1		
98			2
99			
100			
101		2	1
102	1		
103			2
104			
105			
106			1
107	2		
108	2		1
109	6	3	1
110	5	5	1
111	13	6	3
112	4	4	1
113	3	3	
114	2	2	
115	1		
116		1	
117			
118		1	

²⁸¹ Edwards (Yale Coll. 109) gives 3.36, 2.29; Naville Sale 2 gives 3.47, 3.41, 2.54, 3.51, 3.71, 3.36, 3.18, 3.03, 3.19, 3.30, 2.88, 3.20, 3.14, 3.60, 3.10, 3.72, 3.27, 2.97, 2.88, 3.40, 3.24, 3.75, 3.0, 3.09, 3.07; Naville Sale 17 gives 3.62, 3.05, 3.53, 3.69; Princeton Univ. gives 2.38, 3.09, 3.72, 2.79, 3.05.

²⁸² Naville Sale 2 gives 5.14.

and 174.5 grains.²⁸³ The British Museum Catalogue gives the weights of thirteen Syrian tetradrachms that average 203.4 grains.²⁸⁴

Using the weight of the denarius, the ratio of gold to silver is 1 : 11.07; using the antoninianus, the ratio is 1 : 10.71. From the two it would seem that a ratio of about 1 : 11 was indicated.

ELAGABALUS

It is said that Elagabalus²⁸⁵ at the beginning of his reign kept the heavy weights of Macrinus, but later went back to the reduced weights of Caracalla. However, Cohen 288 seems to disprove this if catalogues are correct in assigning various coins to this type. This coin was issued in A.D. 218 and its weight varies from 7.22 to 6.21 grams.

The coins of Elagabalus may, with some uncertainties, be divided between mints at Rome and at Antioch. If Cohen type 288 is divided between the two mints and if type 42 is transferred from Rome to Antioch, the assignment of coins to mints made by Mattingly-Sydenham results in two clear-cut groups. The Antioch mint seems to have struck on the basis of 45 to the pound, the Roman mint on the basis of 50 to the pound.²⁸⁶ Neither group shows a clear point of concentration, though the Antioch

²⁸³ Hunter Coll. has 174.2 grains. See last sentence in Note 228.

²⁸⁴ In addition Ratto Sale of Apr. 4, 1927, gives 13.14, 14.69, 13.98.

²⁸⁵ *Festsch. Otto Hirschfeld*, 298.

²⁸⁶ Elagabalus also opened a mint at Nicomedia. The American trade dollar used in the eastern trade may perhaps be mentioned as an instance of a coin struck to meet a particular situation.

standard seems to have been 110 grains and the Roman 97 grains.

Seventeen denarii struck at Antioch have an average weight of 2.67 grams, while sixty-eight struck at Rome average 3.05 grams.²⁸⁷ Forty-two antoniniani²⁸⁸ struck at Rome have an average weight of 5.1 grams (78.7 grains). It is curious that the lighter denarii should be found at Antioch though perhaps the number is too small to permit inferences of value.

From coins struck at Rome ratios of 1 : 11.03 and 1 : 11.04 are found based on the denarius and antoninianus respectively. This close result would seem to prove the valuation of the antoninianus at 15 to the aureus. Using the coins struck at Antioch a ratio of 1 : 9.4 is found. This is in reasonable accord with the ratio of 1 : 10 which two of the Chinese annals translated by Hirth in his *China and the Roman Orient* say applied to Syria (or Persia?).

The British Museum Catalogue and other sources give the weights of seventeen Syrian tetradrachms that average 201.2 grains.²⁸⁹

In Persia 37 tetradrachms and 22 drachmae issued

²⁸⁷ Edwards (Yale Coll., 109) gives 2.77, 3.47, 2.56, 3.04, 2.52, 2.92, 2.55, *Num. Zeit.* (1914, 228) gives 2.85, 2.84, 2.64; *Num. Chron.* (1939, 42) gives 45.3, 50.3 grains; Naville Sale 2 gives 3.09 grams; *ibid.*, (Sale 17) gives 3.27, 2.90, 3.10; Princeton Univ. has 2.84, 3.12, 3.07, 2.86, 2.98; *Bull. soc. mon. d'Alsace* (1926, 129) gives the average of 32 denarii as 3.17 grams; *Fundbericht Schwaben* (1913, 86) gives 3 that average 2.91; *Viestn. Hrv. Arh.* (1900, 10) gives 2.90; 3.04.

²⁸⁸ *Num. Chron.*, 1939, 40; Princeton Univ. has 4.82.

²⁸⁹ Also from Hunter Coll.

by Volagases V (A.D. 208/222) average 12.60 and 3.60 grams respectively.²⁹⁰

Hammer²⁹¹ gives analyses of eight silver coins, one each with 75, 44, 43.4 and five (including three antoniniani) with 42.8% of silver.

Elagabalus seems to have stopped coinage of the antoninianus sometime in his reign. In the East there is a great abundance of local coinage, indicating that economic activity there was at an extremely high point.²⁹²

TABLE AA
ELAGABALUS AUREI

Grains	Antioch	Rome	Grains	Antioch	Rome
55		1	104	1	
			105	1	
93			106	2	
94		3	107		
95		5	108	1	
96		7	109	7	
97		4	110	4	
98		6	111	7	
99		3	112	1	
100		4	113	1	
101		1	114		
102		3	115	1	
103		2	116	1	

ALEXANDER SEVERUS

Although the aurei of Alexander may be dated within limits of about three years, the number of coins is too small to show any significant differences

²⁹⁰ BMC.; Naville Sale 12; *Rev. Num.*, 1898; Markoff, *op. cit.*; Prokesch-Osten. *op. cit.*

²⁹¹ Hammer, 102; *Num. Chron.*, 1919, 134 does not repeat this quite correctly.

²⁹² *Rev. Num.*, 1899, 274.

in the successive periods. With five exceptions all the gold coins of Alexander shown in the accompanying table are clearly either aurei or quinarii minted on the basis of 50 to the pound.²⁹³ Of these five exceptions, one is an irregular coin.

Alexander is thought to have been deeply concerned with the silver coinage.²⁹⁴ The abandonment of the antoninianus seems to imply an effort to maintain gold and silver at the old ratio of 25 denarii to the aureus rather than at some supposedly different figure introduced by Caracalla or by Commodus. Oertel²⁹⁵ suggests that the aureus was now worth 50 denarii, but this is open to serious doubt. If it is assumed that this was the government rate of exchange between the coins, it implies a ratio between gold and silver of about 1 : 24. This ratio makes silver so much cheaper than it was in the fourth century, that it needs definite confirmation before it can be accepted.

The abandonment of the antoninianus may perhaps be considered a concession to conservatism in finance, but Alexander seems to have been unsuccessful in maintaining the purity of the denarius. The silver content of his coins varies from 50 to 33.8%,²⁹⁶ at the worst a reduction of about 40%

²⁹³ There seems nothing in this list to confirm the statement that Alexander reduced the weight of the aureus to 92 grains, as is stated in *Num. Chron.*, 1919, 134; nor to about 3 grams as stated by Despaux, *Les dévaluations monétaires*, 118.

²⁹⁴ Although the "moneta restituta" of the coins probably refers to the rebuilding of the mint rather than to a revision or restoration of the coinage: see *Num. Zeit.*, 1909, 87.

²⁹⁵ *Camb. Anc. Hist.*, xii, 725.

²⁹⁶ Hammer (p. 103) gives four with 50, two with 47.6, one each with 45, 40.7, 35.8, 35, and 33.8% of silver.

since the time of Caracalla, but on the average a decline of 33%.

The average weight of the aurei issued by Alexander is $97\frac{1}{2}$ grains (6.3 grams) and of the quinarii 50 grains (3.25 grams).²⁹⁷ No single point of concentration is to be found. Ninety-one denarii have an average weight of 47.60 grains (3.08 grams).²⁹⁸

If it is assumed that an aureus was worth 25 denarii, the ratio of gold to silver is 1 : 12.15.

In Persia 24 drachmae issued by Artabanus V (A.D. 213/227) average 3.56 grams²⁹⁹ while 13 issued by Artavasdes (A.D. 227/8) average 3.56 grams.³⁰⁰ One tetradrachm issued by Artaxerxes I (A.D. 226/240), the first of the Sassanian Kings, weighs 13.91 grams,³⁰¹ while 44 drachmae, 9 half-drachmae and 14 silver obols average 3.81, 1.94, and 0.67 grams respectively. Five gold pieces weigh 221, 131, 114.2, 22.4, 21.5 grains, indicating, so it seems, four different denominations. These differences may explain the various denominations in the

²⁹⁷ The statement in *Vita*, 39 that Alexander was the first to coin gold quinarii is incorrect.

²⁹⁸ Edwards (Yale Coll., 111) gives 2.58, 3.0, 2.17, 2.83, 2.6, 3.21, 3.13; *Num. Zeit.* (1908, 45) gives a heavy one as 4.35; Helbing Sale of Apr. 12, 1927, gives 3.5, 3.8; Naville Sale 2 gives 3.28; *Num. Chron.* (1939, 42) gives 51, 48.8, 37.5, 49.1, 49, 51.3, 53.7, 48.7, 50.3 grains; Princeton Univ. has 2.24, 2.86, 3.43, 2.98, 3.22, 2.55; *Bull. soc. mon. d'Alsace* (1926, 129) gives the average of 64 coins as 3.09 grams; *Fundber, Schwaben* (1913, 86) gives one at 3.13; *Viestn. Hrv. Arh.* (1900, 10) gives 3.36, 2.73.

²⁹⁹ BMC.; Prokesch-Osten *op. cit.*; Markoff, *op. cit.*

³⁰⁰ BMC.; Prokesch-Osten, *op. cit.*; Markoff, *op. cit.*; Naville Sale 12. *Zeit. deutsch. morgenländ. Gesellsch.*, 1880.

³⁰¹ Cahn Sale 71; Babelon, *Traité* iii; Paruck, *Sasanian Coins*; *ZDMG.*, 1880.

gold coinages of some of the succeeding Roman rulers.

It is said that Alexander issued an extensive series of copper coinage of good quality and that the word "moneta" which occurs on certain coins refers to the copper dupondius.³⁰² In view of the fact that the copper currency was entirely a token coinage, this seems unlikely. Until the silver currency had utterly collapsed, the quality of the copper was a matter of no practical importance.

An inscription from Rome³⁰³ mentions ten aurei as a *congiarium*, while an inscription scratched on the handle of a small silver dish³⁰⁴ indicates that it was sold or pledged for twelve and one-half denarii.

A document from Dura³⁰⁵ dated A.D. 232 gives a dowry list in denarii; another of A.D. 227 mentions 175 "silver" denarii.³⁰⁶

A section of the Justinian Code³⁰⁷ dated in A.D. 229 refers to the semis and triens, but these may be later interpolations in the text.

Comparison of a section of the Digest,³⁰⁸ presumably written in the time of Alexander Severus, with a section in Gaius,³⁰⁹ written at least fifty years earlier, is sometimes taken to indicate a change in

³⁰² *Camb. Anc. Hist.*, xii, 65 based on Pink, *Num. Zeit.*, 1935, 13ff.

³⁰³ CIL., vi, 2998 (A.D. 229).

³⁰⁴ CIL., v, 8122, 1 (A.D. 234).

³⁰⁵ *Dura*, vi, 434.

³⁰⁶ *Dura*, vii/viii, 434.

³⁰⁷ Cod. Justin., III, 28, 12. In spite of Frank, *Econ. Hist.*, 489 there is apparently no section of the Digest that may safely be used to illustrate the fall of the denarius.

³⁰⁸ Digest, ii, 4, 24.

³⁰⁹ Gaius, iv, 46.

the relationship between the aureus and the denarius. The earlier passage speaks of a fine of 10,000 sesterces; the later speaks of a fine of fifty aurei. There seems little if any justification for assuming that the two sums of money are identical. Mommsen believes that the words "fifty aurei" were in-

TABLE AB
ALEXANDER SEVERUS AUREI

Grains	Number	Grains	Number
46	1	96	12
48	1	97	6
49	1	98	9
50	2	99	10
52	1	100	5
63	1	101	9
70	1	102	5
83	1	103	4
86	2	104	2
90	2	105	6
91	1	106	3
93	4	107	1
94	8	109	1
95	6		

serted by the editors of the Digest in the time of Justinian, so that there is no certainty as to the sum of money mentioned by Ulpian and Modestinus. Savigny suggests that the 10,000 sesterces in Gaius should be read as 5000 sesterces, while Lenel in his edition of the *Edictum Perpetuum* suggests "50,000 sesterces," due seemingly to a misunderstanding of Roman monetary terms. Even if it is assumed that Ulpian wrote "50 aurei" there is still no evidence that the amount of the fine had not been changed since the time of Gaius.

MAXIMINUS I

The eleven coins of this reign are too few in number to permit deductions of any value. The ten aurei average 89.8 grains (5.80 grams), showing a serious decline from the preceding reign. It has been said that Maximinus coined gold only in Rome and for the most part only in A.D. 235.

Forty-one denarii show an average weight of 48.38 grains (3.14 grams).³¹⁰ Hammer³¹¹ gives an analysis of two coins with 45.5% of silver. From this insufficient evidence the ratio of gold to silver appears to be 1 : 12.10.

An interesting shop account from Dura,³¹² dated between A.D. 235 and 240, gives prices in denarii. The accounts illustrate not only the small size of the transactions recorded, but also the fact that there was as yet no indication of any depreciation in the market valuation of the denarius. An inscription from Orcistus³¹³ dated in A.D. 237 mentions an endowment of "2500 Attic (drachmae) of silver of account." The editor of the inscription intimates that this represents an effort to define the size of the gift more accurately than if the word "denarius" had been used. The explanation, as a

³¹⁰ *Num. Zeit.* (1914, 228) gives 3.76, 3.40; Edwards (Yale Coll., 112) gives 3.57, 2.53, 2.28, 2.88, 3.08; Princeton Univ. has 3.01, 3.59; *Bull. soc. mon. d'Alsace* (1926, 129) gives the average of 32 denarii as 3.14 grams.

³¹¹ Hammer, 103.

³¹² *Dura, Fourth Season*, 128, 141.

³¹³ *Jour. Hellenic Studies*, 1937, 1. *Pap. Oxyrh.*, 705 (A.D. 202) does not show that the Attic drachma was then worth four Egyptian drachmae.

matter of fact, raises more questions than it settles. Italian inscriptions erected twenty years later still show that the denarius had a real value.

PUPIENUS AND BALBINUS

Only two aurei of this period are listed here.³¹⁴ Their average weight is $85\frac{1}{2}$ grains (5.54 grams) which is almost exactly on the basis of 60 to the pound.

For some reason these rulers restored the antoninianus to the coinage system. According to a recent authority³¹⁵ older denarii were simply overstruck as antoniniani and re-issued on that basis. One silver coin is said to weigh 49.2 grains (3.19 grams),³¹⁶ while an analysis of one coin issued by Pupienus shows 49% of silver. Twenty-one antoniniani show an average weight of 71.76 grains (4.65 grams) with a high of 84.3 and a low of 47 grains.³¹⁷ These coins, like others found in the Dorchester hoard, show no wear. Mattingly points out that there is no difference in denomination between the high and low weights, which indicates that the coins were struck *al marco* and not according to weight. The average weight of these antoniniani shows a decrease of about 10% below the weight prevailing from A.D. 215 to 222.

With the appearance of the antoninianus as the common silver coin, one is forced to question the

³¹⁴ *Dura, Fourth Season*, 128, 141.

³¹⁵ *Num. Chron.*, 1939, 44. Perhaps this is to be dated soon after the reign of Balbinus and Pupienus rather than during it.

³¹⁶ Edwards, Yale Coll., 113; *Viestnika (op. cit.)* gives one at 2.79.

³¹⁷ *Num. Chron.*, 1939, 40; Naville Sale 17 gives 5.66 and 4.83.

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meaning of the word "denarius" in papyri and on inscriptions. Another problem is raised as to the value of the older denarii that remained in circulation and that were not restruck as antoniniani. Apparently some denarii remained in circulation until the time of Diocletian (see Table AP).

TABLE AC

MAXIMINUS, PUPPIENUS, BALBINUS

Grains	Maximinus	Puppienus	Balbinus
52	1		
71	1		
76	1		
81			1
88	3		1
91	1		
92	1		
100	2		
104	1		

GORDIAN III

The ninety-five coins of this ruler may include two quinarii and one $1\frac{1}{2}$ aureus piece or perhaps these coins represent two double trientes and one $1\frac{1}{3}$ aureus piece. Ninety-two coins are apparently aurei. Their average weight is approximately 75 grains (4.86 grams), though the point of greatest concentration in the distribution of weights is 78 grains.³¹⁸ This is about half way between a basis

³¹⁸ Although a few gold coins of Gordian I are known it has not been possible to find their weights. The weights of the gold coins of Gordian III do not seem to confirm the statement of Giesecke, *Geldwesen*, 172, that Gordian struck on the basis of 64 to the pound, equivalent to 5.11 grams to the aureus. The statement in *Num. Chron.*, 1916, 45 that for a few years preceding A.D. 242 the "striking of aurei had ceased altogether" save on a limited scale for ceremonial purposes does not seem warranted.

of 60 to the pound and of 70 to the pound. It is interesting to point out that the coin weighing 52 grains represents exactly two-thirds of 78 grains. Perhaps this is the first appearance of the fractional parts of an aureus based on thirds. Such coins are said to make their first appearance somewhat later. They were of practical value if the aureus was equal either to fifteen or to thirty antoniniani (or to any other multiple of three).

Following the example of Pupienus and Balbinus, Gordian minted the antonianus in large quantities. The average weight of 567 of these coins from the Dorchester hoard is 67.1 grains (4.35 grams), with a high of 100 and a low of 40.4 grains.³¹⁹ The average weight of 345 coins from a hoard at Plevna is 68.8 grains (4.46 grams).³²⁰ The average weight of 675 coins from Baalan³²¹ is slightly higher, being 69.22 grains (4.486 grams). The average weight of all these coins shows a decrease of about 5% from the preceding reign and of about 14% from the time of Caracalla.

³¹⁹ *Num. Chron.*, 1939, 40; Princeton Univ. has 4.44, 5.01, 5.18, 3.97, 4.56, 3.41, 3.97, 3.87, 3.43, 3.83, 4.17.

³²⁰ *Num. Chron.*, 1924, 237; *Num. Zeit.*, (1914, 228) gives 4.65, 3.03, 2.94, 3.35; *Num. Zeit.*, (1908, 45) gives certain heavy ones as 5.58, 5.58, 5.63, 5.7, 5.88, 6.56; Elmer (*Verzeichnis*) gives the theoretical weights of the denarius and antoninianus as 3.03 and 4.54 grams respectively.

³²¹ *Bull. archeol.*, 1932/33. Seven from Müttersholz are said to average 4.20 grams; *Bull. Soc. Mon. d'Alsace*, 1926, 129. Twenty-nine coins in *Bull. hist. et scientif. Auvergne*, 1939, 56 have an average weight of 4.14 grams with a low of 2.6 and a high of 5.3 grams. *Viestnika (op. cit.)* gives 15 that average 4.10.

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Twenty-two coins have an average silver content of 41.7%, the best coin having 58.9%.³²²

The weights of a few denarii are known.³²³ These average 51.2 grains (3.32 grams), and are therefore heavier than any group since the first century. However, the number is too small to permit any valid deductions.

TABLE AD

GORDIAN III

Grains	Number	Grains	Number
45	1	73	7
52	1	74	9
61	1	75	5
64	1	76	6
65	1	77	3
66	3	78	12
67	1	79	3
68	2	80	7
69	4	81	7
70	4	83	2
71	5	85	1
72	7	111	1

The British Museum Catalogue gives the weights of ten Syrian tetradrachms³²⁴ that average 189.4 grains. One tetradrachm from Caesarea is said to weigh 127.14 grains (8.24 grams).³²⁵

³²² Hammer (103) gives one with 58.9, five with 49, two with 44, five with 36.1 and one with 28.2% of silver; *Num. Chron.* (1924, 238) gives one each with 25.88 and 45.42%; *Num. Zeit.* (1893, 431) gives one with 27%.

³²³ Naville Sale 17 gives 3.55; *Num. Chron.* (1939, 42) gives 57.5 grains; Princeton Univ. has 1.99.

³²⁴ In addition the Hunter Coll. has 187.7, 166.8, 178.2, 220.7 grains; Ratto Sale of Apr. 4, 1927 gives 13.12, 12.19, 13.08, 12.36, 13.50.

³²⁵ Windisch-Graetz Coll.

The low weights of the aureus that characterize the period from A.D. 238 to 268 may perhaps be explained as an effort on the part of the government to have that coin reflect a lowered market, and perhaps legal, valuation of the antoninianus. From the weights given here it appears that the ratio of gold to silver was 1 : 12.15.

PHILIP THE ARAB

The coins of this reign include not only those of Philip, but also those of his wife, M. Otacilia Severa, and of his son, Philip Caesar. The last group are the most uniform in weight, their average being 68.5 grains (4.44 grams). The coins of Philip Augustus and of Otacilia may perhaps be considered to include two double trientes, four $1\frac{1}{2}$ aureus pieces, and the rest aurei on the basis of 70 to the pound, their average weight being 67.9 grains (4.40 grams).

The Dorchester hoard contained 711 antoniniani of this reign with an average weight³²⁶ of 62.9 grains (4.11 grams). These coins had a high of 99.8 and a low of 33.2 grains. The hoard of Baalan³²⁷ contained 488 coins with an average weight of 4.27 grams. These weights make extremely questionable the suggestion³²⁸ that in A.D. 247 the theoretical

³²⁶ *Num. Chron.*, 1939, 40; *Num. Zeit.* (1908, 45) gives a heavy one as 5.73; Princeton Univ. has 4.01, 3.77, 4.06, 4.05, 3.39, 5.06, 4.10, 4.21, 4.19, 4.34, 3.38, 3.42, 3.89, 3.66; *Atti e Memorie* (1919, 36) gives one at 4.60; *Viestnika (op. cit.)* gives 8 that average 4.0 and 3 of Philip II that average 3.76 grains; *Num. Zeit.* (1893, 431) gives 10 that average 4.14 and 10 each of Philip II as Caesar and Augustus that average 4.30 and 4.08 respectively.

³²⁷ *Bull. archeol.*, 1932/33.

³²⁸ Elmer, *Verzeichnis*.

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weight of the antoninianus was reduced to 3.84 grams or to 1/84th of a pound.

Analyses of fourteen coins³²⁹ show a silver content varying from 50 to 32%, with an average of 43.7%.

The British Museum Catalogue gives the weights of forty Syrian tetradrachms that average 187.5 grains.³²⁰

From the weights given here it appears that the ratio of gold to silver was 1 : 13.4, a very decided change from the preceding reign but a ratio in reasonable accord with that of the next two reigns.

It has been suggested³³¹ that in the time of Philip the aureus was worth 60 denarii or 65 denarii.³³² This is based on the well-known inscriptions from Kerdassi in Nubia,³³³ which read as follows:

5008: ". . . I spent 6500 (?) drachmae in the second year for the god Pursepmonis."

5010: ". . . obeisance of Psentuaxis . . . priest of the guild for the second time. . . For the first time 20 gold pieces were spent and for the second 30 gold pieces."

As first read, these two inscriptions were used to

³²⁹ Hammer, 103 gives three with 50 and one each with 47.5, 47.4, 45, 44.3, 43.5, 39.8, 32% of silver; *Num. Chron.* (1924, 238) gives one each with 36.05 and 44.90% of silver.

³³⁰ In addition the Hunter coll. gives 175.1, 169.2, 198.2, 186.2, 174.6, 190.8, 222.9, 195, 192.8, 171.2, 207, 163, 190.4, 187, 187.3 grains; Ratto Sale of Apr. 4, 1927, gives 8.82, 13.77, 13.04, 12.24, 11.92, 12.57, 11.88, 12.73, 13.83, 10.50, 11.71, 12.21.

³³¹ *Camb. Anc. Hist.*, xii, 725; Wilcken in *Z. f. N.*, 1887, p. 325; Kubitschek in *Quinq.*, p. 105; Mickwitz, *Geld*, p. 51; Heichelheim in *Klio*, XXVI (1933), p. 103.

³³² *Num. Chron.*, XIX (1939), p. 44. Kubitschek, *Quinq.*, p. 105 says possibly 6 drachmae to 1 denarius.

³³³ *C.I.G.*, 5008, 5010 (241/244 A.D.).

support the statement that 20 aurei were then worth 3500 drachmae; a later reading was used to support the statement that 20 aurei were then worth 6500 drachmae.

TABLE AE

PHILIP

Grains	Philip	Otacilia	Philip Caesar
46	1		
48	1		
53	1		
61		1	
62	1		
63		1	
64	4	2	
65	3		1
66	1		3
67			1
68	2		
69	1	2	1
70			1
71	1		
72	1		1
73	3	1	1
74			1
75			
76	1		1
79		1	
84	1		
97	1		
110		1	
111	1	1	

It is unfortunate that the figures representing the number of drachmae are a matter of uncertainty; but, in view of that uncertainty, any inferences from these inscriptions should be made as possibilities rather than as facts. To say that these inscriptions show a value of the drachma 31% lower than in the

time of the Antonines³³⁴ or a 170% decrease from the time of Commodus³³⁵ is, it seems, going beyond the evidence. The inscription has also been used to support the theory that the relation of gold to silver was 1 : 5.86,³³⁶ but of course nothing in the inscription proves this, even if one accepts the second reading as correct.

TRAJAN DECIUS

Decius struck gold not only in his own name but also in those of his wife and of his two sons. The distribution of weights is puzzling, anticipating as it does the confused coinage of Trebonianus, Volusianus, Valerian and Gallienus. The coins that may be considered aurei issued by Decius in his own name average about 66½ grains; those issued for Etruscilla average about 67½ grains, while the few coins of the two sons are lighter. These differences, of course, may be due to the small number of available weights, but it should be pointed out that the average weights mean little, due to the wide range covered by the coins.

The average weight of 1364 antoniniani found at Plevna is 63.67 grains (4.12 grams);³³⁷ the average of 594 coins from Dorchester is 58.1 grains (3.76

³³⁴ Mickwitz, *Geld*, p. 51.

³³⁵ *Klio*, XXVI (1933), p. 103. Arithmetically this is an impossible decrease.

³³⁶ Kubitschek, *Quinq.*, p. 105.

³³⁷ *Viestnika* (op. cit.) gives 3.73, 3.92, 2.89 for Decius; 3.22, 3.17 for Etruscilla; 4.51, 3.93 for Etruscus; *Num. Zeit.* (1893, 431) gives 10 of Decius that average 3.90; ten of Etruscus at 3.90 and ten of Hostilian at 3.59; *Num. Chron.*, 1924, 237; *Atti e Memorie* (1919, 36) gives one at Decius at 3.75 and one of Etruscilla at 4.20.

grams); the average of twelve coins in the Princeton collection is 3.83 grams. The difference in weight between the coins from Plevna and those from Dorchester is surprisingly large, particularly in view of the fact that the latter group are said to show no wear.³³⁸

TABLE AF
TRAJAN DECIUS AUREI

Grains	Decius	Etruscilla	Herennius Etruscus	Hostilian
38			1	
50		1		
52	1			
54	2		1	1
56	1	1	1	
57			1	
58		1		
59	1	1	1	
60	1	1		
61	1	1	2	2
62	2	3		1
63	2	1		1
64	3	1	1	
65	2	1		1
66	2	1	1	
67	7	3	1	
68	2	3		
69	3	1		
70		2		
71	3	2		
72	2	1		
73				1
74	4	1		
75	1	2		
76	2	2		
77	1			
78	1			
79	1			
82		2		
94		1		
120/130	1			

³³⁸ *Num. Chron.*, 1939, 40.

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The British Museum Catalogue gives the weights of thirty-nine Syrian tetradrachms that average 190.6 grains.³³⁹ It was in this reign that the practice of overstriking old denarii as antoniniani became common³⁴⁰ if one may judge from the Dorchester hoard. Thirteen coins³⁴¹ show a silver content varying from 75 to 40.6%, with an average of 41.9%.

From the weights given here, the ratio of gold to silver is 1 : 13.

An inscription from Ostia³⁴² mentions a sportula of three denarii given to the *decuriones*, while one from Tenos³⁴³ mentions sportulae of one and two denarii. Both these cases seem contemporary gifts rather than the distribution of endowment income. Both indicate that there was still market value in the coin designated as a denarius.

TREBONIANUS GALLUS AND VOLUSIANUS

The coins of Trebonianus and of Volusianus, while offering a wide diversity of weights and no clear concentration at any point, are clearly heavier than those of the preceding reign.

Blanchet³⁴⁴ in an interesting study has divided the coins of these two rulers into aurei and double

³³⁹ In addition the Hunter Coll. has 183.3, 209.6, 205.5, 207.4, 183.6, 195.9, 176.2, 165, 183.9, 200.4, 193.6, 169.6, 170.7, 172.3, 166.7; Ratto Sale of Apr. 4, 1927 gives 11.76, 10.78, 12.44, 12.44.

³⁴⁰ *Num. Chron.*, 1939, 40.

³⁴¹ Hammer, 103 gives one with 75, one with 44 and two with 40.6% of silver; *Num. Chron.* (1924, 238) gives one each with 43.89, 42.76, 42.6, 42.47, 34.85, and 20.29% of silver.

³⁴² *CIL.*, xiv, 352.

³⁴³ Dittenberger, *IGS.*, 890.

³⁴⁴ *Études de Numismatique*, ii, 105ff.

trientes on the basis of whether the head was radiate or decorated with laurel. He found average weights of 5.86 and 3.65 grams respectively and no wide discrepancies. The larger number of pieces in the present tables, divided in the same way, give slightly different results: 5.81 and 3.65 grams for Trebonianus, and 5.64 and 3.78 grams for Volusianus. Assuming descriptions have been correctly given in the catalogues and elsewhere, the present results offer some difficulties: a coin of 6.99 grams among the radiate coins of Trebonianus, one of 3.01 grams among the radiate coins of Volusianus, and one of 5.92 grams among the laureate coins of Volusianus. The same system of division seems to fail utterly when applied to the coins of Valerian and Gallienus, and not to work with the coins of Decius or Philip. Too much stress should not, therefore, be laid on it here. This is made clear by table AG which includes coins up to 100 grains issued by Philip, Decius, Trebonianus and Volusianus.

Grouped by variations of 5 grains (about 3/10th grams) the coins of Trebonianus and Volusianus appear as shown in table on p. 146.

Two points of concentration are evident in this tabulation. The heavier shows thirty-nine coins weighing from 86 to 95 grains, the lighter thirty-four coins weighing from 51 to 65 grains. It will be noticed at once that the lighter group indicates weights about two-thirds those of the heavier group.

All the coins appearing in the tabulation can be accounted for by assuming there are four trientes,

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Weight in grains	Number of coins		Total
	Trebonianus	Volusianus	
31/35	0	1	1
36/40	1	1	2
41/45	1	0	1
46/50	2	7	9
51/55	9	6	15
56/60	4	1	5
61/65	8	5	13
66/70	2	0	2
71/75	0	1	1
76/80	0	3	3
81/85	7	3	10
86/90	6	10	16
91/95	9	12	21
96/100	2	1	3
107	<u>1</u>	<u>0</u>	<u>1</u>
Total	52	51	103

forty-two double trientes, fifty-six aurei and one $1\frac{1}{8}$ aureus piece or, to keep the standard in better agreement with that of Decius, by assuming that there are four double trientes, forty-two aurei, fifty-six $1\frac{1}{8}$ aureus pieces and one $1\frac{1}{2}$ aureus piece. On this basis the aureus was struck either at fifty to the pound, or at eighty to the pound. However, there is nothing on the coins themselves to indicate this difference in denomination.

The average weight of 550 antoniniani mostly from the Dorchester hoard³⁴⁵ is 54.11 grains (3.51

³⁴⁵ *Num. Chron.*, 1939, 40; *Bull. hist. et scientif. Auvergne* (1939, 56) gives 35 coins of the two rulers that average 3.47 grams with a low of 2.7 and a high of 4.9 grams; *Num. Zeit.* (1893, 431) gives 10 of Trebonianus and 10 of Volusianus that average 3.62 and 3.74 re-

grams), with a high of 86.4 and a low of 27.9 grains. The silver content of the coins of Trebonianus varies from 44 to 29.7%, and of the coins of Volusianus from 80.6 to 33.2%.³⁴⁶ In the former the average silver content is 34.9%, while in the latter it is 60.9%.

The British Museum Catalogue³⁴⁷ gives the weights of twenty-three Syrian tetradrachms of Trebonianus which average 187.9 grains and of seven coins of Volusianus³⁴⁸ which average 182.8 grains.

Since only four aurei of Aemilianus appear in the tables, it is unsafe to base any generalizations on them. Forty-three antoniniani from the Dorchester hoard show an average weight of 53.5 grains (3.47 grams), with a high of 72.8 and a low of 43 grains.³⁴⁹

From the weights given here a ratio of 1 : 13 is indicated for the three rulers.

In view of the financial debacle that occurred under Valerian and Gallienus, it is perhaps natural that we should find in this period the latest reference to a gift of a few denarii that was deemed worthy of commemoration. An inscription from Minturnae³⁵⁰

spectively. *Viestnika* (op. cit.) gives 17 of Trebonianus and 10 of Volusianus that average 3.49 and 3.58 grams respectively; *Atti e Memorie* (1919, 36) gives one of Volusianus at 3.25.

³⁴⁶ For Gallus, Hammer, 104 gives one each with 44, 37, 30, 29.7% of silver and for Volusianus two with 80.6 and one each with 72.4, 38, 33.2% of silver.

³⁴⁷ See also coins in the Hunter Coll.

³⁴⁸ See also coins in the Hunter Coll.

³⁴⁹ *Num. Chron.*, 1939, 40. *Viestnika* (op. cit.) gives one at 3.13; *Num. Zeil.* (1893, 431) gives 10 that average 3.60.

³⁵⁰ CIL., x, 6012 (dated under Aemilianus).

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records a sportula of three denarii. This also is probably a contemporary gift rather than a distribution of income from invested capital.

TABLE AG
LAUREATE AND RADIATE AUREI

Grains	Philip		Decius		Trebon.		Volus.		Totals	
	L	R	L	R	L	R	L	R	L	R
32							1		1	
40							1	1	1	1
42					1				1	
46	1						1		2	
47					1				1	
48	1								1	
50							2		2	
51					1				1	
52			1			1			1	1
53	1				1	1	1	1	3	2
54			1		3		1		5	
55			1						1	
56			1		1		1		3	
57			1						1	
58					1				1	
59			1		1				2	
60							1		1	
61			1		2		1		4	
62	1		3		1				5	
63			1		1				2	
64	1		3						4	
65	4		5		2				11	
66	2		2		1				5	
67			5						5	
68	1		5						6	
69	1		1		1				3	
70										
71		1	3						3	1
72	1		1						2	
73	1	1	2					1	3	2
74		1	3						3	1
75										

TABLE AG—*Continued*

Grains	Philip		Decius		Trebon.		Volus.		Totals	
	L	R	L	R	L	R	L	R	L	R
76	1		3						4	
77			1						1	
78			1					1	1	1
79			1						1	
80								1		1
81						1				1
82						2				2
83						1				1
84	1							1	1	1
85						2		1		3
86						1	2		2	1
87						1		4		5
88						1		1		2
89								2		2
90						1				1
91						2	1	1	1	3
92						1		4		5
93						2	1	3	1	5
94						4				4
95								1		1
96										
97	1								1	
98								1		1
									<hr/>	<hr/>
									97	48

Cohen numbers:

Philip—laureate 23, 56, 71, 86, 164, 191, 213
 radiate 104, 118, 177

Decius—laureate 1, 3, 31, 48, 62, 85, 104, 107, 108

Trebonianus—laureate 1, 12, 16, 19, 60, 83, 92
 radiate 18, 25, 28, 36, 62, 66, 82, 113

Volusianus—laureate 4, 6, 10, 56, 69, 83, 134
 radiate 19, 24, 54, 57, 82, 88, 117

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TABLE AH			
TREBONIANUS, etc., AUREI			
Grains	Trebonianus	Volusianus	Aemilianus
32		1	
40	1	1	
42	1		
46		1	
47	1	1	
48	1		1
49		1	
50		4	1
51	1		1
52	4	2	
53	1	2	
54	3	1	
55		1	
56	1		
58	2	1	
60	1		
61	3	2	
62	1	2	1
63	1		
64	2		
65	1	1	
66	1		
68	1		
72			
73		1	
78		2	
80		1	
81	1		
82	2		
83	2	1	
84		1	
85	2	1	
86	2	3	
87	1	4	
88	1	2	
89		1	
90	2		
91	2	3	
92	4	4	
93		3	
94	3	2	
97	2	1	
107	1		

VALERIAN AND GALLIENUS

The gold coins of this period, covering the fifteen years from A.D. 253 to 268, and numbering nearly 500, present a peculiarly difficult problem.³⁵¹ Two hundred and five of these coins may be assigned to the period before the capture of Valerian, the rest to the sole reign of Gallienus. It is interesting to note that, if the assignment of mints and dates in Mattingly-Sydenham is correct,³⁵² Gallienus alone coined gold after the capture of Valerian.³⁵³ Apparently all the coins of Salonina and of Valerianus Caesar appeared before that time.

Of the coins dated to the joint reign only twenty-seven out of 205 weigh over sixty grains, while in the sole reign 138 out of 280 weigh over sixty grains. This fact in itself is evidence for some change in the system of coinage. However, any attempt to suggest a system of coinage for this period must be advanced with caution. Lack of technical skill in the mint hardly seems a satisfactory explanation for any of the difficulties.

An interesting comparison with the coinage of the sole reign of Gallienus is afforded by the coinage of Postumus, dated A.D. 260 to 268. The weights of aurei of Postumus are as follows:³⁵⁴

³⁵¹ For different ideas as to the family of Valerian and Gallienus compare Mattingly-Sydenham, v, i, 28, and Bernhart, *Handbuch zur Münzkunde*. Bernhart, *op. cit.*, 19, indicates that the custom of weighing gold began about the middle of the third century.

³⁵² For the dating of Valerian and Gallienus see also *Num. Chron.*, 1929, 218 and *Berytus*, 1938, 47.

³⁵³ *Chron. an.*, 354 speaks of a two aureus piece in connection with Gallienus.

³⁵⁴ Found in BMC.; Hirsch Sale 24; Naville Sales 16, 17; Bachofen Coll.; Basel Munzhand., Sales 6, 8; E. T. Newell Coll.

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Weight in grains	Numbers by mints		
	Lyons	Cologne	Milan
69		1	
71			1
73	1		
74	1		
75	1		
76	1		
78	1		
80	2		
81	2		
82	1		
83	1	1	
84	3		
85		1	
86	2	2	
87	2	1	
88	2		
89	1	1	
90	2		
91	5	2	
92	4	1	
93	4		
94	1	1	
95	2	1	
96	2	1	
97	3		
98	2		
100	1	1	
101	1	1	
103	1	3	
104		1	
105	1		
108	2		
111	1		

The distribution of weights seems to indicate coinage on the basis of 50 to the pound, but with careless adherence to that standard.

The difference between the coinage of Postumus and that of Gallienus as sole ruler may be shown by arranging the coins in groups of five grains:

Weight in grains	Coins of Gallienus	Postumus
to 24	53	
25/29	6	
30/34	12	
35/39	11	
40/44	10	
45/49	10	
50/54	24	
55/59	15	
60/64	14	
65/69	34	1
70/74	24	3
75/79	17	3
80/84	15	10
85/89	8	12
90/94	12	20
95/99	6	11
100/104	5	9
105/109	4	3
110/114		1

Under Valerian and Gallienus there was a further debasement of the antoninianus, the silver content falling, so it is said, to about 25%.³⁵⁵ This state-

³⁵⁵ Bernhart, *Handbuch*, 21, suggests that until A.D. 256 the antoninianus had averaged 50% of silver. Hammer, 104 gives two coins of Valerian with 40% of silver and one each of Gallienus with 72, 50, 47, 34.6% of silver. The coins called "silver-plated" have much less silver.

ment, however, is based on too few analyses to be thoroughly dependable. This decrease in the value of the antoninianus should, theoretically at least, have brought about a decrease in the weight of the aureus. If one considers the apparent decrease of weight in the aureus under Trebonianus, the length of the reign of Valerian and Gallienus, and the comparatively good coinage of the succeeding ruler, Claudius, it seems that there should be evident a period of decreasing weights following A.D. 253 and a period of increasing weights preceding A.D. 268.

On the basis of the dating suggested by Mattingly-Sydenham the coins of Valerian and Gallienus may be analyzed chronologically as follows:³⁵⁶

A.D. 253:

Valerian: 2.58, 2.62, 2.64, 2.79, 2.85, 2.88, 2.98, 3.20, 3.44, 4.03, 4.48, 6.48 grams. Assuming these represent nine double trientes, two aurei and one $1\frac{1}{3}$ aureus piece, the average weight of the aureus is 4.40 grams or on the basis of 70 to the pound.

Gallienus: 4.16, 5.58 grams. These fall rather badly into the standard of 70 to the pound, if the heavier piece is considered a $1\frac{1}{3}$ aureus piece.

A.D. 253/254:

Valerian: 2.67, 2.70, 2.72, 2.74, 3.15, 3.32, 3.60, 5.00, 5.30, 5.60 grams. Assuming that these coins represent double trientes, aurei, and $1\frac{1}{3}$

³⁵⁶ Mommsen, *Röm. Münswesen*, 776 n. 116 says, the first sure one-third aureus piece is found at this time.

aureus pieces, the weight of the aureus is 3.80 grams, or a basis of 80 to the pound.

Gallienus: 2.30, 2.78, 2.84, 2.89, 3.07, 3.12, 3.29, 3.62, 3.64, 3.70, 3.84, 3.87, 3.88, 4.16 grams. On the assumption that these coins represent six double trientes and eight aurei, the weight of the aureus is 3.92 grams; if, however, the heaviest piece is considered a $1\frac{1}{3}$ aureus piece, the weight of the aureus is 3.82 grams. Both of these assumptions indicate a basis of 80 to the pound. If the weights of the coins are thought to indicate ten aurei and four double trientes, then the indicated basis is ninety to the pound.

A.D. 254/255:

Gallienus: 2.06, 2.30, 2.78, 2.83, 2.93, 3.07, 3.14, 3.50, 3.75, 3.95 grams. Assuming that these coins represent either four or five aurei and the balance double trientes, the weight of the aureus is either 3.78 or 3.64 grams. In either case, the basis is 80 to the pound, very badly adhered to. The basis of 90 to the pound is less likely.

A.D. 255/256:

Valerian: 2.08, 2.15, 2.33, 2.60, 2.67, 2.79, 2.89, 3.09, 3.09, 3.28, 3.38, 3.40, 3.40, 3.78, 5.00 grams. On the assumption that these coins represent one $1\frac{1}{3}$ aureus piece, seven aurei, and seven double trientes, the weight of the aureus is 3.53 grams, or on the basis of 90 to the pound.

Gallienus: 2.09, 2.30, 2.52, 3.36, 5.35 grams. On

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the assumption that there is one aureus in this list (3.36 grams), the basis is 90 to the pound.

A.D. 256/257:

Valerian: 1.55, 1.90, 2.03, 2.09, 2.10, 2.15, 2.22, 2.31, 2.36, 2.56, 2.57, 2.60, 2.66, 2.68, 2.95, 3.30, 3.30, 3.53, 3.74, 3.90, 4.11 grams. On the assumption that these coins represent three $1\frac{1}{8}$ aureus pieces, four aurei, thirteen double trientes, and one triens, the average weight is about 3.3 grams, or on the basis of 90 to the pound.

Gallienus: 2.00, 2.07, 2.39, 2.45, 2.48, 2.49, 2.69, 2.72, 2.90, 3.65 grams. If two of these coins are assumed to be aurei and the balance of the coins double trientes, the weight of the aureus is 3.50 grams, about 6% heavier than the contemporary coins of Valerian.

A.D. 257/258:

Valerian: 2.50, 2.74, 3.50 grams.

Gallienus: 1.48, 2.17, 2.39, 3.40, 3.69 grams. Assuming these coins represent aurei, double trientes and trientes, the weight of the aureus is approximately 3.6 grams or on the basis of 90 to the pound.

A.D. 258/259:

Gallienus: 1.65, 1.90, 2.03, 2.21, 2.30, 2.48, 2.72, 2.80, 3.05, 3.08, 3.10, 3.66, 3.85 grams. On the assumption that these represent seven aurei, five double trientes and one triens, the weight of the aureus is 3.3 grams, or on the basis of 90 to the pound.

The legend **IMP C P LIC VALERIANUS P F AVG** appears to have been used during the years A.D. 255 to 257. Weights are as follows: 1.55, 1.90, 2.03, 2.08, 2.09, 2.10, 2.10, 2.15, 2.22, 2.31, 2.32, 2.33, 2.36, 2.40, 2.47, 2.49, 2.50, 2.56, 2.57, 2.60, 2.60, 2.62, 2.66, 2.67, 2.79, 2.85, 2.89, 3.00, 3.09, 3.28, 3.30, 3.40, 3.53, 3.75, 4.11, 5.00, 5.30, 5.60 grams. On the assumption that these coins represent three $1\frac{1}{8}$ aureus pieces, thirteen aurei, twenty-four double trientes, and one triens, the average weight of the aureus is 3.4 grams, or the basis of 90 to the pound.

There are sixteen legends on the reverse of the coins that are common both to Valerian and to Gallienus:

- | | |
|-------------------------|----------------------|
| 1. AETERNIT AVGG | 2. AETERNITAS AVGG |
| 3. APOLINI CONSERVA | 4. FELICITAS AVGG |
| 5. FIDES MILITVM | 6. IOVI CONSERVA |
| 7. IOVI CONSERVATORI | 8. LAETITIA AVGG |
| 9. LIBERALITAS AVGG III | 10. ORIENS AVGG |
| 11. PAX AVGG | 12. PROVIDENTIA AVGG |
| 13. RESTITVTOR ORBIS | 14. ROMAE AETERNAE |
| 15. VICTORIA AVGG | 16. VIRTVS AVGG |

Legends 5, and 6 were used by Gallienus in his sole reign as well as in the joint reign. Weights of coins on which legends 1 and 8 were used indicate a basis of 80 to the pound; weights of coins on which legends 3, 4, 7, 10, 11, 14 were used indicate a basis of 90 to the pound. The other groups afford no indication of any basis.

Of the coins struck by Gallienus in his sole reign, those with **GALLIENAE AVGVSTAE—VBIQVE PAX**

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which range in weight from 4.81 to 7.15 grams do not indicate any standard; those with the masculine form of Gallienus and **VBIQUE PAX** indicate a basis of 80 to the pound; those with **VOTIS X ET XX**, which are dated in A.D. 263 indicate a basis of 90 to the pound. If all the other coins of the sole reign are grouped together the result is as follows:

58 trientes averaging 62 grains to the aureus.

55 double trientes averaging 63.2 grains to the aureus.

99 aurei averaging 62 grains to the aureus.

14 heavier pieces averaging 63 grains to the aureus, if they are considered as $1\frac{1}{8}$ aureus pieces. These results indicate a basis of 80 to the pound.

The preceding analyses may with some probability of correctness be summarized as follows:

A.D. 253/254: coinage at 70 to the pound.

A.D. 255/263: coinage at 90 to the pound.

A.D. 264/268: coinage at 80 to the pound. In view, however, of the inability to arrange chronologically coins issued after A.D. 260 there may well be, in this later period, coins issued at 70 to the pound.

That there was a definite scheme of coinage during these sixteen years seems more reasonable than that there was no standard. The latter view implies the granting of full freedom of action to the officials in charge of the mints. To say that the gold coins of this period represented bars of gold with pictures

and legends but with no fixed value is an easy way of avoiding the problem presented by the variety of weights found in the coins of Valerian and of Gallienus, but the very variety of weights as of legends (over eighty-five for Gallienus) seems to be against that view. In large transactions between debtor and creditor, gold has, theoretically at least, passed by weight, whether in Roman or in modern days, but small transactions, involving, let us say, a single gold piece, are tremendously handicapped if it is necessary for that single piece to be weighed and its exchange value in subsidiary coins made a matter of bargaining. If the government were coining gold solely for its own purposes, there would be a large and very obvious saving in reducing the number of pieces coined from a pound of gold. It is interesting to note that, in the forged letters said to have been written about Claudius by Valerian and Gallienus, gold coins, and those presumably of low weights, are referred to by number and not by weight.³⁵⁷ In one case 300 trientes are mentioned. On the basis of 90 aurei to the pound, these amount to over a pound of gold.³⁵⁸ It is tempting to infer that a pound of gold was intended, which would imply aurei on the basis of 100 to the pound, but in that event it is strange to find a writer mentioning the number of pieces, at

³⁵⁷ *Vita Claud.*, 14, 17.

³⁵⁸ There seems no evidence that higher officials were paid in gold rather than in subsidiary coins, in spite of Giesecke, *Geldwesen*, 173. Certainly until well into the reign of Diocletian, pay classifications were still on the old basis of sesterces. It is possible that the copper coins because of their greater weight were worth more than the very debased "silver" coins.

a time when it was customary to speak of gold and silver by the pound.

In Britain at this time, local copies of imperial coins appear in a flood, due, perhaps, to the depreciation of the official coins.

As was the case in Germany after the first World War, this period of depreciating coinage, though an almost insurmountable handicap to regular business, was an 'Eldorado for speculators.'³⁵⁹ Where the German operator made use of foreign exchange as the basis of his trading, his Roman counterpart could make use of his government's gold coins.

It has been suggested³⁶⁰ that in A.D. 264 there was a reduction in the theoretical weight of the antoninianus to 3.41 grams, or one ninety-sixth, and of the denarius to 2.27 grams, or 1/144th, of a pound. But here again there is no real evidence for this statement. *Al marco* coins do not readily show changes in standards. The average weight of 409 antoniniani from the Dorchester hoard is 49.3 grains (3.20 grams).³⁶¹ The average of 237 coins of Valerian and of 482 coins of Gallienus found at Baalan³⁶² is 3.59 and 3.60 grams respectively. The

³⁵⁹ Mickwitz, *Geld*, 59.

³⁶⁰ Elmer, *Verzeichnis*.

³⁶¹ *Num. Chron.*, 1939, 40. *Atti e Memorie* (1919, 36) gives 13 of Valerian averaging 3.90 and 31 of Gallienus averaging 3.0; *ibid.* (1921, 63) gives one of Valerian at 3.90; *Num. Zeit.* (1893, 431) gives 10 of Valerian that average 3.20; 10 of the fourth year of Gallienus that average 3.20 and 10 others that average 3.63. *Viestnika (op. cit.)* gives 78 of Valerian and 67 of Gallienus that average 3.02 and 2.93 respectively; *Wiltshire Arch. and Nat. Hist. Magazine* 1937/38 gives one of Gallienus at 41 grains.

³⁶² *Bull. Archeol.*, 1932/33.

average of 138 coins of the two rulers from another hoard³⁶³ is 3.23 grams with a low of 1.9 and a high of 4.9 grams.

Sapor I, who ruled in Persia from A.D. 241 to 272, issued both gold and silver.³⁶⁴ His gold varied greatly in weight as may be seen from the following table:

Grains	Pieces
149	1
127	1
115	2
114	1
113	2
112	1
111	2
104	1

It is evident that these weights are more in keeping with the Roman gold of the first century than of the period of Valerian and Gallienus. In silver Sapor issued drachmae, half-drachmae and obols. Average weights are as follows:

	Number	Weight in grains
Drachmae	63	60.0
Half-drachmae	5	28.7
Obols	13	9.2

If one assumes that the gold unit was worth 25 drachmae, and that 113 or 114 grains was the weight

³⁶³ *Bull. hist. et scientif. Auvergne*, 1939, 56.

³⁶⁴ Babelon, *Traité iii*; Paruck; *Zeit. deutsch. morgenländ. Gesellsch.*, 1880. The coin suggested by Paruck as 1/8 drachma has been figured here as an obol.

162 GOLD AND SILVER STANDARDS

TABLE AJ

AUREI

		(a) Valerian				(b) Diva Mariniana				
		a		a		a		a		b
		Rome		Rome		Antioch		Milan Lyons		Uncer- Rome
		Grs. 253/4	255	255/6	256/7	253	257	257	258	tain 256
to	20									
	21									
	22									
	23				1					
	24									
	25									
	26									
	27									
	28									
	29				1					1
	30									
	31				1					1
	32			1	2					1
	33	1						1		
	34				1					
	35			1	1					1
	36			2	2					1
	37									1
	38								1	3
	39	1			2					
	40	1		1	1					
	41	2		1	2					2
	42	2							1	
	43	1		1		1				
	44	3		1						2
	45				1					1
	46			1		1				
	47			2						
	48	1								1
	49					1				1
	50			1		1				3
	51	1			1			1		1
	52			1	2					
	53	1								
	54				1				1	1
	55									1
	56									
	57						1			1
	58		1							
	59									

TABLE AJ—*Continued*

		(c) Gallienus, joint (d) Salonina		(e) Valerian Caesar (f) Gallienus, sole					
		c	c	c	c	c	d	e	f
		Rome	Rome	Rome	Asia	Milan	uncer-	all	all
		253/4	254/5	255/6	256/7	257/8	256/8	257/8	tain
to	20								36
21									1
22					1				4
23									7
24									5
25					1				2
26					1			1	2
27				1	1			1	2
28									
29				1	1				
30								1	3
31		1		1					2
32			1	1				2	1
33					1			2	1
34								2	1
35		2			1		1	3	3
36				1	3			2	3
37				1				2	1
38				2				1	2
39	1	1		1	1			1	2
40		1		1				1	1
41		1		1				1	2
42		1				1	1	2	3
43		3						2	1
44		3		1				1	3
45		1					1	1	1
46		1							3
47	1	2			3			1	3
48	1	2						1	
49								2	3
50								1	5
51	1	1							6
52						1			7
53							1		
54		2						1	6
55				1					3
56								2	4
57		2							2
58							1	1	2
59				2				1	1
									4

164 GOLD AND SILVER STANDARDS

TABLE AJ—*Continued*

Grs.	(a) Valerian		(e) Valerian Caesar		(c) Gallienus, joint		(f) Gallienus, sole	
	(d) Salonina							
	a	a	c	d	e	f		
	Rome	Rome	Uncer- Rome	Rome	all	all	all	
	253/4	255	256/7	tain	253/4	254/5		
60							1	
61						1	2	4
62	1			1			1	3
63			2					3
64					1	1	1	3
65							1	10
66								5
67				1			1	7
68								5
69				1				7
70								2
71								8
72								4
73								4
74							1	6
75								7
76								3
77	1	1						2
78								3
79								2
80	1						2	3
81								4
82						1		
83								6
84								2
86	1				1		1	
88								8
92								5
93								1
94								6
95								2
96								2
97								1
98								1
100	1							
101								3
102								
103								2
106								2
110								2

of the gold unit, then the ratio of gold to silver was about 1 : 13. This is in close agreement with the contemporary Roman ratio.

A papyrus of the year A.D. 260³⁶⁵ gives what is probably the earliest definite evidence for popular distrust of the subsidiary coinage: "Since the officials have assembled and accused the bankers of the Banks of Exchange of having closed them on account of their unwillingness to accept the divine coin of the emperors, it has become necessary that an injunction should be issued to all the owners of the banks to open them, and to accept and exchange all coin except the absolutely spurious and counterfeit, and not to them only, but to all who engage in business transactions of any kind whatever" This document, however, cannot be safely used to denote distrust of the imperial denarius or antoninianus. It would seem to apply only to the coins minted at Alexandria, for Egypt, in a monetary sense, was still a world by itself.

CLAUDIUS II

Whatever the system used by Gallienus, Claudius seems to have had other ideas. The fifteen coins for which weights are available, issued both by Claudius and in the name of his brother, range from 86 to 71 grains.³⁶⁶ Their average weight is 80 grains, indicating a basis of 60 to the pound, if indeed the number of coins is great enough to permit an opinion. The change from the apparent lack of

³⁶⁵ *P. Oxyrh.*, 1411.

³⁶⁶ Disregarding one whose authenticity is questioned.

system under Gallienus is as complete as it is sudden.³⁶⁷ It is a curious fact that a few more weights can be found for aurei issued by Victorinus, who reigned in Gaul from A.D. 268 to 270, than for Claudius. Their distribution is as follows:³⁶⁸

Weight in grains	Number of coins	Weight in grains	Number of coins
72	2	82	1
73	1	83	2
74	1	85	1
75	4	87	2
78	2	93	1
79	2	97	2

These coins cover a slightly wider range than the aurei of Claudius and their average weight is slightly above that found for Claudius.

Homo³⁶⁹ says that the antoniniani struck by Claudius outside of Rome averaged 3.409 grams, while those struck in Rome averaged 3.067 grams, indicating, so he says, a cheating of about 10% by those running the mint at Rome. The coins minted at Rome contained from 1.7 to 2.4% of silver, those minted at Ticinum (not Tarraco as he says) from 2.5 to 2.7%, those minted at Siscia from 2.75 to 3%

³⁶⁷ Mickwitz, *Geld*, 58, applies the words "grosse Unordnung" to the coinage of Gallienus and Claudius. Apparently the term does not properly apply to Claudius.

³⁶⁸ Weights from BMC.; Bachofen Coll.; and *Rev. Num.*, 1889, 514. There seems to be a difference between the two mints operated by Victorinus.

³⁶⁹ *Aurelian*, 156; *Atti e Memorie* (1921, 63) gives 3 that average 3.70; *Num. Zeit.* (1893, 431) gives one at 3.35; *Wiltshire A. & NH.* (*op. cit.*) gives 42, 27, 40, 35.5 grains.

and those minted at Antioch about 8.75%. These variations, according to Homo, were the reason for Aurelian's attempt to correct the performance of the Roman mint.³⁷⁰ However, similar differences in the gold coins of Galba and Elagabalus imply no cheating and it may well be there is no idea of malfeasance here.

TABLE AK
CLAUDIUS II

Grains	Rome	Milan	Uncertain	Quintillus
71	1			
72	1			
75		1		
77				1
80			2	1
81	1			
82			1	
84	1			
85		1	1	
86		1	2	
94	1*			

* Perhaps a forgery.

AURELIAN

Because Aurelian made a serious effort to reform the currency as well as to correct alleged abuses in the mints, the dating of his gold coins is a matter of great importance.³⁷¹ It is unfortunate that it has not

³⁷⁰ Hammer, 104 gives one with 7.93, 4.22, two with 2.1, and one with 1.86% of silver. A tetradrachm from Alexandria shows 3.81% of silver; on p. 107 an antoninianus of Quintillus from Tarraco with 3, one from Rome with 2.3, one from Sisacia with 2.9 and two from Cyzicus with 0.8% of silver; *Num. Zeit.* (1893, 431) shows variations from 3 to 13.1%.

³⁷¹ How much effect the gold captured in Palmyra had in bringing about the reform of the coinage system is unknown but it would seem to be of comparatively little importance.

yet been satisfactorily done. Only ten coins are definitely dated to the pre-reform period, four from the Roman mint, six from the mint at Siscia. The Roman coins average 74 grains in weight, the Siscia coins 85 grains. The former are on the basis of 70 to the pound, the latter at 60 to the pound. This is not a satisfactory result for coins presumably contemporary, but the small number of coins may distort the result.

Three coins from the Roman mint marked TR P VII COS II, and therefore definitely assigned to the post-reform period, weigh 6.31, 6.52, and 6.63 grams, probably normal variations for a basis of 50 to the pound. The thirteen coins from the Milan mint, which seem to include two quinarii (or double trientes), apparently fall into two groups, one at 70 to the pound, the other at 60. The coins of Severina Augusta, whether from Rome or Antioch, are still heavier, with one exception all coming within the range of 50 to the pound.

The aurei of Tetricus, who ruled in Gaul from A.D. 270 to 275, have weights as follows.³⁷²

Weight in grains	Number of coins	Weight in grains	Number of coins
47	1	65	4
50	1	66	3
51	4	67	2
52	1	68	1
53	1	69	2
55	2	70	2

³⁷² Weights from BMC.; Naville Sale 17; Bachofen Coll.; E. T. Newell Coll.; *Rev. Num.*, 1889, 514.

Weight in grains	Number of coins	Weight in grains	Number of coins
56	2	71	3
57	2	72	4
58	2	73	1
59	3	75	1
60	4	77	1
61	4	78	1
62	1	79	1
63	1	119	1

About 40% of these coins are found within a range of 56 to 65 grains and only one weighs over 80 grains. Their average weight, therefore, is much lower than is the case with the coins of Aurelian. In this respect they differ from the coins of Postumus and Victorinus, which were heavier than the contemporary imperial coins.

Giesecke³⁷³ divides the gold coinage of Aurelian into three periods, corresponding to the three periods in the subsidiary coinage as described by Mattingly-Sydenham. The weights as given by Giesecke are as follows:

Period	Weight of Aureus	Ratio Gold to Silver
1	5.45 grams	1 to 7.82
2	4.36 grams	1 to 9.76
3	6.54 grams	1 to 6.50

The weight of the aureus at these respective periods does not seem supported by the weights

³⁷³ *Geldwesen*, 185.

given in the present paper, while the decrease assumed for the second period does not seem logical. There is no evidence for the ratios between gold and silver that are given by Giesecke, and as a matter of fact there is no period in the Roman Empire when ratios as low as these are even probable.

Elmer³⁷⁴ suggests that at the time of Aurelian's monetary reform, the theoretical weight of the antoninianus was increased to 3.84 grams or to 1/84th of a pound, and of the denarius to 2.59 grams or to 1/126th of a pound. For this hypothesis, however, there seems no evidence.

The revolt of the mint employees at Rome³⁷⁵ is not discussed here because it has not yet been proved that it was due primarily to dishonest practices in the mint. Whether Aurelian's reform virtually demonetized the Gallic issues as suggested by Sutherland³⁷⁶ seems doubtful in view of the continued presence of those coins in late third century hoards.

The weights and analyses of Aurelian's antoniniani may be summarized as follows from the figures given by Rohde:^{376a}

³⁷⁴ *Verzeichnis*.

³⁷⁵ *Econ. Survey*, iv, 223 and Malalas, xii, 301 seem wrong in locating this revolt at Antioch; Zosimos (i, 61) says Aurelian minted "new silver" for the people. Sanders (*Amer. Jour. Archaeology*, 1924, 75) suggests a reading of "5 holokottinai" in a document he dates about A.D. 270 but this seems unlikely.

³⁷⁶ *Coinage and Currency in Roman Britain*, 69.

^{376a} Rohde, T. *Die Münzen des Kaisers Aurelianus*, 305 ff.

AVERAGE WEIGHTS

Mint	Pre-Reform				Reform	
	Period I		II		III	
	No.	Wt.	No.	Wt.	No.	Wt.
Spain	20	3.50	488	3.48	155	3.79
Gaul			2	2.60	2	4.11
Rome	12	3.17	22	3.80	118	3.69
Siscia	20	3.53	246	3.51	343	3.79
Serdica			62	3.55	97	3.59
Cyzicus	76	3.56	59	3.61	65	3.91
Antioch					40	3.84
Tripolis					9	3.73
Unknown			144	3.37		
Average	128	3.49	1023	3.49	829	3.77

ANALYSES

Percentages of Silver

Period	II		III	
Spain	8	3.14	4	4.475
Rome			3	3.83
Siscia	3	3.93	4	3.72
Serdica	1	2.85		
Cyzicus	2	3.95	2	3.75
Antioch			1	4.45
Unknown	4	3.27		
Average	18	3.37	14	4.02

While the average silver content is approximately $\frac{1}{2}\%$ higher in Period III than in Period II, the range of single coins varies from 4.40% to 2.80% in Period II and from 4.90 to 2.575% in Period III. Dattari gives the analysis of two undated coins as 3% silver, while Hammer gives nine analyses that vary from 5.8 to 0.98%.

Grains	TABLE AL										
	AURELIAN AUREI										
	Rome pre	Siscia pre	Rome post	Rome n.d.	Milan	Lyons	Siscia post	n.d.	Antioch	Severina Rome	Siscia
47					1						
54					1						
57								1			
61								1			
64	1				1	1		1			
67								1			
69					1			1			
70								2			
71	1										
72									1		
73					1						
74								3			
75					1			2			
76					2						
77	1										
78								1	2		
79								1	3		
80									1		
81		3						3	1		
82								1	1	2	
83					1					1	

TABLE AL—Continued

Grains	Rome pre	Siscia pre	Rome post	Rome n.d.	Milan	Lyons	Siscia post	Siscia n.d.	Antioch	Severina Rome	Siscia
84								1	2		
85	1				2				1		
87		1						1			
88		1						1			
89									2		
92								1			
94		1			1			1			
95									1	1	
96					1			1			
97			1							1	
98			1					1			1
99						1					
100			1							1	
101										1	
102			1								
103								2			
105								1			
109								3			
115											1
118								1			
119								2			
120/130								5			

174 GOLD AND SILVER STANDARDS

The gold and silver coins issued in Persia³⁷⁷ may be classified as follows:

Gold struck by Varahran I (A.D. 272/276)

Grains	Number
224	1
112	2
110	1

The silver occurs in three denominations:

	Hormisdas (A.D. 272)		Varahran I	
		Average Number in grains		Average Number in grains
Drachma	1	67	14	61.4
Half-drachma	1	29	1	28
Obol			2	8.3

TACITUS

Considering the shortness of his reign, there is a surprising number of coins extant bearing the name of Tacitus: nine from Gallic³⁷⁸ mints, eight from the Roman mint, and thirty-eight from the mint at Siscia. The coins from the Gallic and Roman mints seem to be on the basis of 70 to the pound, with one coin that may be either a $1\frac{1}{8}$ or a $1\frac{1}{2}$ aureus piece. The coins from the mint at Siscia do not fall readily into any single standard and have no noticeable point of concentration, although they seem to indicate a basis of 60 to the pound.

The coins of Florianus seem to fall into two groups; those from the mint at Ticinum on the

³⁷⁷ Babelon; Paruck; *Zeit. deutsch. morgenländ Gesellsch.*, 1880.

³⁷⁸ Either Lyons or Arles but not Cologne.

TABLE AM

TACITUS AUREI

Grs.	Gaul	Rome	Siscia	Tici- num	Anti- och	Florianus Cyzicus	Rome	Tici- num
63			1					
64			2	1				1
66		1						2
67	1		1					
68	1		2					
69	1		1					1
70		1						1
71	1	2	2		1			2
72	3	1	1					
73		1	1					
74	1		2	1				
75			3					
76			2	1				
78			1					
79			2					
80		1	1					
82			1					
83			1	1				
84			1					
87		1						
90				1				
91							1	
92				1				
96			3	1				
97			1					
98			4					
99			1			2	1	
101							1	
102	1		1	1				
103			1					
107			2					

basis of 70 to the pound; the few from Rome and Cyzicus that are definitely heavier and that seem to be on the basis of 50 to the pound, unless they are to be considered as $1\frac{1}{8}$ or $1\frac{1}{2}$ aureus pieces.

176 GOLD AND SILVER STANDARDS

Weights of the antoninianus are rare.³⁷⁹ Sixteen coins from one hoard³⁸⁰ average 63.26 grains (4.10 grams).

PROBUS

The 144 gold coins of Probus show two distinct points of concentration when arranged by weights. The first is around 80 to 82 grains, the second around 98 grains. The four light weight coins from the Roman mint are apparently quinarii on the basis of 60 to the pound, judging them by their average weight, but if judged individually one is on the basis of 50 to the pound. These are the two bases indicated by the distribution of weights of the coins considered to be aurei.

Two hundred and ten antoniniani have an average weight of 57.5 grains (3.73 grams).³⁸¹ The silver content³⁸² varies from 5.2 to 2.24%, with an average from ten analyses of 3.12%.

It is interesting to note, in view of the apparent increase in weight of the aureus, that contemporary documents from Egypt give the first evidence extant of a pronounced increase in prices. A lease of the year A.D. 280 records the rental of a store room which is at a figure approximately thirty times as

³⁷⁹ Bernhart (*Mittel. Bay. Num. Gesellsch.*, xxix, 1911) gives a quinarius at 2.24 and a denarius of Florianus at 3.2 grams. Hammer, 107 gives one coin each with 5.9, 4.9, 4.4% of silver.

³⁸⁰ *Atti e Memorie*, 1921, 63.

³⁸¹ Bernhart (*op. cit.*), gives 3.6, 4.18, 3.4, 5.48, 5.35, 3.3, 3.57, 4.0, 4.54, 3.25, 3.68, 4.35, 2.95, 4.05, 4.0, 3.91, 4.51, 4.34, 4.46 and a possible quinarius at 2.7 grams.

³⁸² Hammer 107 gives four with 5.2 and one each with 4.4, 3.82, 3.76, 3.4, 3.22, 2.24% of silver.

TABLE AN
PROBUS AUREI

Grains	Rome	Tici- num	Lyons	Siscia	Serd- ica	Cyzicus	Anti- och	Uncer- tain
30	1							
35	1							
40	1							
49	1							
73			1					
74	1				1			
75				1				
76	1		1					
78							1	
79			1	1				
80	1		1	1	2	2	1	
81		1		1		1		
82			1	2		3		
83	1	1		1	1			
84			1		1	1	2	
85	2		1					
86						1		
87				1		1	1	
88				1				
89	1			1				
90	2			1	1		1	
91	2			2				
93	2	1		1	1			
94				1				
95	2						1	
96	1	1	1	2			4	
97		3	2	1				1
98	2	1		4			2	1
99		1		3	1	2	1	
100	2	2		1		1		
101	2					1	1	
102			1			2	1	
103	1							
104	1	1	1		2		1	1
105			1	4				
106	2	1		1				
108								
109				1	1			
111				1			1	
114				1				
115				2				
117	1							
120/130	1			3				

great as the rental for the identical room twenty-one years earlier.³⁸³ Unfortunately no European prices for this period are preserved.

CARUS AND CARINUS

The aurei issued by Carus and the various members of his family may be divided into three groups. Group "A" includes the coins of Carus, of Carinus as Caesar, and of Magnia Urbica; Group "B" includes the coins of Carinus as Augustus and of Numerianus as Caesar; Group "C" includes those of Numerianus as Augustus. The letter "N" refers to the number of coins; the letter "W" to the average weight of that particular group.

Mint	Group A		Group B		Group C	
	N	W	N	W	N	W
Rome	35	71	33	80	23	82
Ticinum	6	70	2	79	2	81
Siscia	45	71	26	76 ³⁸⁴	6	73
Lyons	13	69	2	73		
Cyzicus	17	71	6	72	5	75
Antioch	6	77	7	71	2	71
Uncertain	11	71 ³⁸⁵	4	75	6	80

The coins in groups "B" and "C" are later in date than those in Group "A", and it is interesting to note that the later coins are, with the exception of those minted at Antioch, uniformly heavier than the earlier ones. It would appear that Carus struck at

³⁸³ *P. Giess*, 50; *P. Flor.*, 63.

³⁸⁴ Omitting one of 105 and one of 95 grains.

³⁸⁵ Not counting one quinarius.

TABLE AO

AUREI

Gr.	(a) Carus				(b) Carinus Caesar			
	a Rome	a Tici- num	a Lyons	a Siscia	a Cyzi- cus	a Anti- och	a uncer- tain	b Rome
44							1	
56								2
59								
61			2	1				
62					1			1
63								
64				2				1
65			3	3				
66				4	1			
67	1		1	1				
68		1	1		1	1	3	1
69	1	4	1	2	2		2	
70							1	
71				1	3	1	2	
72			1	1		1		
73		1	1	3	1	1	1	
74				2				1
75				1				1
76	1			1				
77	1			1			1	
78								
79				3				
80								1
81				2				
82				1	1			
83			1		2			
84								
85								
86								
87								
88								
89								
90								
91								
92								
93								
94								
95								
96								
101								

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TABLE AO—Continued

(b) Carinus Caesar				(c) Carinus Augustus			
b	b	b	b	b	c	c	c
Gr. Lyons	Cyzi- cus	uncer- tain	Siscia	Antio- och	Rome	Tici- num	Lyons
44							
56							
59							
61							
62			1				
63			1				
64			1				
65							
66			1				
67							
68	1	1				1	
69		2	1		3		
70		1			2		
71					3		
72		1	1				
73					1		
74			2		1		
75		1			2		1
76					2		
77					3		
78	1				1		
79							
80					1		
81							
82					2		
83					2		
84			2				
85			1				
86				2			
87					1		
88					1	1	
89					2		
90			1		1		
91					1		
92							
93					2		
94			1		1		
95							
96							
101					1		

TABLE AO—*Continued*

(c) Carinus Augustus (d) Magnia Urbica (e) Numerianus Caesar

Gr.	c Siscia	c Cyzi- cus	c uncer- tain	d Rome	d Siscia	e Lyons	e Siscia	e Cyzi- cus
44								
56								
59								
61		1						
62				1				
63					1			
64								
65	1			1				
66								
67	3			1				
68								
69				2				1
70	1			1		1		
71	3	1		1				
72		1	1	3				1
73	2							
74	1		1	4				
75			1	2			1	
76	1			3			1	
77	2							
78					1			
79	1		1	1				
80								
81		1						
82								
83								
84								
85								
86								
87	1			1				
88	1							
89								
90	2							
91								
92	1							
93								
94	1							
95								
96								
101								

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TABLE AO—*Continued*

	(e) Numerianus Caesar				(f) Numerianus Augustus			
	e	f	f	f	f	f	f	
Grs.	Antioch	Rome	Ticinum	Siscia	Cyzicus	Antioch	Uncertain	
44								
56								
59	1							
61								
62								
63								
64								
65								
66		1						
67	1				1		1	
68				1	2			
69		1		1				
70				1	1	1		
71	1					1		
72	1			1			1	
73	1			1				
74								
75	1	1						
76								
77		3						
78		1						
79		3						
80		1						
81		1	2				1	
82				1			1	
83	1	1						
84		3			1			
85		2					1	
86		1						
87								
88								
89								
90		2						
91								
92							1	
93								
94								
95		1						
96		1						
101								

70 to the pound, while Carinus attempted to strike at 60 to the pound.

Weights of the antoniniani of Carus, Numerianus and Carinus are seldom recorded. Twenty-four of Carus average 57.86 grains (3.75 grams); forty-five of Numerianus 59.41 grains (3.85 grams); sixty-five of Carinus 61.10 grains (3.96 grams)³⁸⁶ giving a combined average of 59.95 grains (3.89 grams). An analysis of one coin of Carinus shows 5% of silver.³⁸⁷

DIOCLETIAN

In his excellent study of the gold coinage of this period Pink has classified over 300 coins issued by Diocletian in his own name according to mints and dates. Table AQ has been made in accordance with the classification adopted by Pink. The results of that table may be conveniently shown by the summary on pp. 184-5, from which coins that are clearly fractional pieces have been omitted. The number of coins is indicated by "N", while the average weight in grains is indicated by "W".

Several noteworthy phenomena appear in the coinage of Diocletian. Coins weighing between 100 and 130 grains disappear with but one exception, that coin weighing 101 grains.³⁸⁸ Of far greater importance, is the evidence that there was a change in basic standards not later than A.D. 286. One hundred and

³⁸⁶ Bernhart, *Mittell. Bay. Num. Gesell.*, 1911; *Atti e Memorie*, 1921, 63.

³⁸⁷ Hammer, 107.

³⁸⁸ This is not true of the coinage of Diocletian's three associates. Their coins weighing over 100 grains are fairly common although they are not listed in the table if they weigh over 104 grains.

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twenty-seven coins from the mints at Rome, Cyzicus, Lyons, and Antioch dated in the years 284 to 286 show an average weight of 71 grains, indicating a basis of 70 or 72 to the pound. Twenty-seven coins

Date	Mints at											
	Rome		Ticinum		Aquileia		Lyons		Carthage		Treves	
	N	W	N	W	N	W	N	W	N	W	N	W
284/6												
285/6	20	70 ^{***}					9	69				
286												
286/7	23	83					1	81				
286/8			4	79								
286/9												
287	1	91										
287/9												
288/93	51	82										
290												
290/2												
293	10	82									22	84
293/99			1	101								
294												
294/5											4	81
294/99	7	81										
295/6											6	81
296/7									1	88		
296/99					10	82					6	78
297/8												
299/02												
300/2												
302/3											7	82
303			3	82	6	81			1	79	16	82

from the mint at Cyzicus dated in A.D. 286, twenty-three from the mint at Rome dated A.D. 286/7, and at least ten each from the mints at Siscia and Antioch dated in A.D. 286/89 all show average weights of 82 or 83 grains, indicating a basis of 60 to the

^{***} Omitting three quinarii.

pound. No later group containing five or more coins varies more than 5% from this average, except one dated A.D. 296/99 from the mint at Treves.

Of the 526 coins appearing in the tables, only five

	Thessa- lonica		Nico- media		Siscia		Cyzicus		Antioch		Alex- andria	
	N	W	N	W	N	W	N	W	N	W	N	W
284/6							67	71	31	71		
285/6												
286					1	83	27	82				
286/7												
286/8												
286/9					12	83			10	82		
287												
287/9							6	82				
288/93												
290									10	80		
290/2					3	78	35	83	23	82		
293							17	83				
293/6									9	82		
293/99					10	83						
294							10	83				
294/5												
294/99												
295/6			7	82								
296/7												
296/99												
297/8									7	80	2	81
299/302									6	79		
300/02	7	81										
302/3												
303			3	83	2	83						
304/5					2	78						

percent show weights that are within ten percent of the theoretical weight of coins on the basis of 50 to the pound; too few, it seems, to justify the conclusion that they were intentionally struck on that basis. This seems to mean that there is nothing in

the tables to justify statements that the aureus in A.D. 301 was on the basis of 50 to the pound,³⁹⁰ however attractive the relationship of that basis to the statement in the Edict on Prices which fixes the value of a pound of gold at 50,000 denarii. It seems reasonable to assume that this valuation of gold was not an exception to the general statement that all articles in the Edict were underpriced.

Apparently there is also nothing in these tables to indicate that Diocletian changed the weight of the aureus five times, as Seeck first suggested.

About A.D. 294 Diocletian brought out a good silver piece of the same weight as the denarius of Nero.³⁹¹ This is the piece generally known as the argenteus. Mickwitz³⁹² gives the average weight of 560 of these good silver pieces as 3.09 grams. Using the ratio of twelve and one-half silver pieces to the aureus, and the theoretical weight of both the aureus and the argenteus, Giesecke³⁹³ finds a ratio between gold and silver of 1 : 7.8. But if one assumes that the aureus was worth twenty-five silver pieces,

³⁹⁰ So Giesecke, *Geldwesen*, 185. Pink (*Num. Zeit.*, 1930, 37) believes that Diocletian issued no gold on the basis of 50 to the pound.

³⁹¹ Hammer, 107 gives three analyses of pre-reform coins, one each with 4.5, 2.0 and 1.5% of silver. On p. 112 an Alexandrian tetradrachm shows 1.81% of silver. One post reform coin shows 94.3% of silver. For silver issues of Diocletian see particularly *Num. Zeit.*, 1930.

³⁹² *Systeme*, 42. One in Princeton weighs 2.56 grams. Pink (*Num. Zeit.*, 1930, 38) says that the silver was struck *al marco* and that the weights vary from 2.2 to 4.4 grams, the majority being found between 2.9 and 3.6 grams.

³⁹³ *Antikes Geldwesen*, 222; *CR. Acad. Inscript.* (1925, 68) gives the ratio as 1 : 13 for Diocletian; Pridik (*Num. Zeit.*, 1929, 67) believes 1 : 13.02 is correct.

and uses the actual average weights of the two coins, one finds a ratio between gold and silver of about 1 : 14.4.

Just what Diocletian's system of coinage was remains a problem. Three attempts at interpretation are summarized here:

- 1 aureus—12½ argentei³⁹⁴—100 sesterces—250 folles—double denarii—1000 denarii communes, according to Giesecke, or
- 1 aureus—20 argentei—500 folles—2000 centenionales, according to Bernhart, or
- 1 aureus—20 argentei—40 folles—160 radiate coins—400 small bronzes—800 denarii, according to Mattingly-Sydenham.

Mickwitz works out a system: 1 pound of gold—2000 argentei—50,000 denarii, but this involves a practically impossible relationship between the aureus and the argenteus, if the former was struck at 60 to the pound.

The important point about this monetary reform was the introduction of a good silver coin, and its definite relationship to the aureus, even though today that relationship does not seem to be definitely known. However, the inference from the gold and silver ratio which appears here makes it probable that the aureus was worth 25 argentei. The monetary uncertainties preceding Diocletian's attempt at reform had been marked by a great increase in the volume of circulation and by the disappearance of all

³⁹⁴ Heichelheim (*Symb. Osloenses*, xiv, 85) thinks that P. Oslo, 83 shows this relationship but unless one reads into the papyrus something it does not say this is not true.

stability in prices. The world needed reliable coins of gold and silver, and these Diocletian provided. The weak point in his reform was an apparent deficiency in the supply of good silver and the silver-washed subsidiary coinage which was tarified too high in relation to the good coins. This weakness resulted in rising prices, which Diocletian tried to control by his Edict on Prices. Diocletian's reform was short-lived,³⁹⁶ but it laid the base on which Constantine was later to build his lasting system.

The preceding tables have disregarded the gold coins struck by the three men associated with Diocletian in the government. It is apparent that Diocletian had already changed the gold standard before Maximian became Augustus in A.D. 286. The following table shows Diocletian's coinage after the change in weights, and the coinage of Maximian and of the two Caesars. The uniformity of the coinage is evident, though the accuracy of the minting is not what might be expected. In the case of Diocletian 60.2% of the coins fall within a range of 80 to 84 grains, while in the case of the associate rulers, 56½% fall within the same range.

Something should be said about the contemporary coinage of Carausius in Britain. Mattingly³⁹⁶ gives the average weight of his aureus as 67.3 grains (4.36 grams). Eight coins found in other collections average 70 grains.³⁹⁷ Both indicate a standard of 70

³⁹⁶ Thus Mattingly (*Roman Coins*, 223) says hardly any silver was struck between A.D. 307 and 340 although the siliqua was introduced in the West in A.D. 312.

³⁹⁶ *Roman Imperial Coinage.*, v, 2, 436.

³⁹⁷ Hirsch, Sales 24, 30; Naville, Sale 17; *Num. Chron.*, 1907, 156; E. T. Newell Coll.

Weight in grains	Diocletian after 286	The Associates
67	1	
68		2
69	1	3
70	2	3
71	2	1
72	2	1
73	3	1
74	5	9
75	7	7
76	10	12
77	19	21
78	16	4
79	10	25
80	34	52
81	47	21
82	35	84
83	68	12
84	40	72
85	16	29
86	11	16
87	7	10
88	7	12
89	2	4
90	5	6
91	7	5
92	2	4
93		1
94	1	3
95	1	
96	1	2
97	5	2
99	3	2
100	1	4
101	1	1
102		2
103		1

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to the pound, badly adhered to. This standard is curious in view of the fact that Diocletian's coinage had been definitely changed to 60 to the pound before Carausius began to strike gold.

Carausius also issued a silver coin of good quality, though apparently none has ever been scientifically analyzed.

In Persia three rulers struck gold and silver during the reign of Diocletian:³⁹⁸ Varahran II (A.D. 276/293), Varahran III (A.D. 293) and Narses (A.D. 293/302). The coinage of the successor to Narses, Hormisdas II, is left for discussion in connection with that of Constantine. The gold coins show weights as follows:

Grains	Varahran II	Varahran III	Narses
115	1		1
114	1		1
113	3		1
112	3		
111	4	2	1
110	1		
109	1		
105			1
102	1		
21	1		

Silver coins were issued in denominations of one drachma, half drachma and obol. Average weights are as follows:

³⁹⁸ Paruck; Babelon; *Zeit. deutsch. morgenländ. Gesellsch.*, 1880.

	Varahran II		Varahran III		Narses	
	No.	Average	No.	Average	No.	Average
Drachma	50	60.5	3	60.7	21	58.0
Half-drachma	5	29.9				
Obol	12	9.0			3	8.0

Table AP, which follows, is an attempt at an analysis of the hoards of silver coins buried after the death of Alexander Severus and before A.D. 305. Before A.D. 215, of course, all the coins are denarii, after that the distinction between denarii and antoniniani has not always been sufficiently recorded to make a separation of the two coins possible. Especially noteworthy is the almost complete disappearance of pre-Valerian coins in the hoards buried under Aurelian and later.

A document³⁹⁹ which the editors believe should be dated to a period just before A.D. 296 may throw additional light on the currency difficulties of the times: "Dionysius to Apion, greeting. The divine fortune of our masters has ordained that the Italian coinage (nomisma) be reduced to the half of a nummus. Make haste, therefore, to spend all the Italian silver that you have on purchases, on my behalf, of goods of every description at whatever price you find them. For this purpose I have dispatched an officialis to you. But take notice that

³⁹⁹ P. Rylands, *Inv.*, 650 in *Trans. Intern. Numis. Congress*, 1936, 246. "Coinage" is a translation of the Greek word *nomisma*, while "silver" is a translation of the Greek *argyron*. For other uses of "Italian money" see *Stud. Pal.*, xx, 85. Heichelheim thinks "Italian coinage" in the present papyrus refers to gold and that the papyrus indicates a doubling of the gold piece in terms of the denarius.

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TABLE AP
SILVER HOARDS OF THIRD CENTURY⁴⁰⁰

	Maximinus	Gordian III	Philip	Decius	Trebonianus Volusianus	Valerian	Gallienus
Diocletian							
British							
Carinus							
Carus							
Probus							
Florianus							
Tacitus							
Aurelian							
Tetricus							
Claudius							
Victorinus							
Gallienus							3900
Postumus							1665
Valerian						109	1820
Aemilianus						1	124
Volusianus					32	33	1643
Trebonianus					80	33	2614
Decius				1671	1143	73	5712
Philip			267	522	813	229	12334
Gordian III		60	332	1025	925	278	15473
Balbinus etc.		4	7	28	2	3	108
Gordian I, II		2		2			3
Maximinus	122	115	16	1867	55	26	86
Alexander	574	269	460	9033	101	853	378
Elagabalus	458	142	283	6344	128	216	471
Macrinus	115	14	8	440		58	13
Caracalla	813	182	97	6525	38	2233	245
Septimius	1061	361	233	13640	63	3089	197
Albinus	7	5	2	200		5	4
Didius	2			16			
Pertinax	6	2		57		1	
Commodus	125	175	10	3749	6		6
Marcus	231	354	8	13838	4	8	
Pius	220	271	2	12200	3	2	1
Hadrian	113	140		6689			
Trajan	62	66		5234			
Nerva	6	7		323	1		
Domitian	33	6		633	1		
Titus	22	5		445			
Vespasian	48	35	1	1731			
Vitellius	4	1		134			
Otho		1		47			
Galba	1	2		50			
Nero	6	2		102			
Republic				29			
Totals	4029	2221	1726	86574	3395	7251	46797

TABLE AP—*Continued*

	Claudius	Aurelian	Tacitus	Probus	Carus	Diocletian
Diocletian						6700
British						903
Carinus						3809
Carus					1	1322
Probus				5		13499
Florianus			1			576
Tacitus			1			2937
Aurelian		659	1037	62		11791
Tetricus		11334	236	4276	26	16955
Claudius	137	8075	1055	2789	23	13453
Victorinus	2631	2783	107	686	10	5633
Gallienus	1348	7030	1229	2627	36	12796
Postumus	1652	2426	23	52	11	472
Valerian	841	281	16	1	2	86
Aemilianus	5					1
Volusianus	188		2			5
Trebonianus	269	3			3	13
Decius	220	2				15
Philip	368	2			1	29
Gordian III	371	5				47
Balbinus etc.						
Gordian I, II						
Maximinus	3					5
Alexander	39					30
Elagabalus	11	1				28
Macrinus						1
Caracalla	4					13
Septimius						12
Albinus						
Didius						
Pertinax						
Commodus	9					
Marcus	8					1
Pius	5					
Hadrian	1					
Trajan						
Nerva						
Domitian						
Titus						
Vespasian	1					
Vitellius						
Otho						
Galba						
Nero						
Republic						
Totals	8111	32601	3707	10498	113	91132
Grand Total						298155

should you intend to indulge in any malpractices I shall not allow you to do so."

The editors, Roberts and Mattingly, believe that the coin here being devalued⁴⁰¹ is the XX.I piece of Aurelian and his successors and that the eagerness to spend it, evidenced by this papyrus, may be one of the reasons which led to the great increase in prices that Diocletian sought to regulate by his Edict on Prices.

⁴⁰⁰ The hoards used to form Table AP are as follows:

Maximinus: Cologne 1909; Wachtendonk; Marienfels; Niederaschau.

Gordian III: Compiègne; Stellata; Chesterfield; Müttersholz; Preselles.

Philip: Nicolaëvo; St. Quentin; *Num. Chron.*, 1897, 119.

Decius: Rutschuk; Reka Devnia; Plevna; Baden; Brickendonbury; Kingersheim.

Trebonianus: Serbia; Metz 1889; Sablon; Glibovoc; Jagodine.

Valerian: Niederbieber (two); Poole Harbor; Edlington; Hamaide Wodecq; Limoges.

Gallienus: Paris; Rouen; Dorchester; Marcilly; Clermont; Turin; Baalen; Schwarzenacker; Testaccio; Xanten; Mürlenbach; Vinay; Mainz; Poppelsdorf; Garcina; Smederevo; Jublains; Wallers; Chalandry; Couvron; Eu; St. Brieuc.

Claudius: Selsey; Akkerwoude; Castellato Stura; Nagyberki; Orenhofen; Orscholz; Trier 1898.

Aurelian: Saboc; Upton; Linwood; Blackmoor; Baconsthorpe; Arona; Ham Hill; Long Wittenham; Forchheim; Cattenes; Fossana; Heddernheim; Metku; E. T. Newell; Alex; Fins d'Annecy.

Tacitus: Sillingy; Cordiere.

Probus: Fins d'Annecy.

Carus: Swenningen.

Diocletian: Caruiff; Blackmoor; Venera; Colchester; Linchmere; Antioch of Pisidia; Egypt 1888, Ettelbrück 1889; Treviglio; Nieder Rentgen; Dambel.

⁴⁰¹ The editors say that the appearance of X.I on coins of Tacitus and Carus is evidence of previous attempts to reduce the nominal value of the XX.I piece.

An indication of difficulties brought about by an increase in the value of coins is to be seen in a Talmudic quotation given by Heichelheim:⁴⁰² "One may not redeem with coinage which is not in circulation . . . Raba asked R. Hisda: 'What if a man has made a loan in coinage which later increases in value?' He answered: 'The borrower shall give him the coinage in circulation'."

There are a few contemporary references to the gold and silver coins. A section of Justinian's Code mentions aurei.⁴⁰³ The Edict on Prices uses the denarius as its monetary unit while a papyrus⁴⁰⁴ of A.D. 286/293 mentions "silver money." A papyrus which possibly belongs to the time of Diocletian⁴⁰⁵ speaks of the payment of the crown gold tax in grammata of gold. After the time of Diocletian the word "denarius" when found in Egyptian papyri⁴⁰⁶ often means "drachma."

A letter written in A.D. 296⁴⁰⁷ instructs the recipient to "make anklets for my daughter" out of three *holokottinoi*. Of greater interest, another document of A.D. 293 mentions a sum of 820 plus sesterces.⁴⁰⁸ This is apparently the last non-literary reference to this coin that is now extant.

⁴⁰² *Econ. Survey*, iv, 218, note 40; Bab Baba Quamma, 97b.

⁴⁰³ iv, 57, 6.

⁴⁰⁴ P. Oslo, 135.

⁴⁰⁵ PBM., 966. The date is uncertain.

⁴⁰⁶ As P. Oxyrh., 1104 (A.D. 306). Perhaps also Viereck, *Gk. Ost.*, 167; P. Oxyrh., 1718.

⁴⁰⁷ Winter, *Misc. Papyri*, 218 (A.D. 296).

⁴⁰⁸ Grenfell, *New Class. Frag.*, ii, 110 (A.D. 293).

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TABLE AQ

DIOCLETIAN AUREI

Grains	285/6	Rome				Ticinum				Aquileia	
		286 287	287 287	288 293	293 299	286 288	293 299	293 299	303	296 299	303
26				1							
34	2										
35	1			2							1
36											
38											
43											
48											
58								1			
59	1										
60											
62											
63	2										
64											
65											
66	1										
67											
68	2										
69	3										
70	2										
71	1	1			1						
72						1					
73	1	1		1							
74	2										
75				1		1					
76	1	2		3			1		1		
77		2		3	1	1					
78				2			1				1
79				2	1						
80		2		2						3	1
81	2	3		6	3	1	2				2
82	1			7	1						1
83		2		8		1			1	6	1
84				2						1	
85		2		2	1						
86		2		2	1	1					
87		2		3	1						
88	1	1		3					1		
89				1							
90						1					
91		1	1	1							
92				1							
94				1							
95											
96											
97		2									
99											
100											
101									1		

TABLE AQ—*Continued*

Gra.	Lyons		Carthage			293	Treves				303	Thessa-	Nicomedia	
	285 286	286 287	296 297	303	294 295		295 296	296 299	302 303	lonica 300 302		295 on	303	
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91					1					2				
92														
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100					1									
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198 GOLD AND SILVER STANDARDS

TABLE AQ—Continued

Grains	Siscia					Cyzicus					
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73						3	1				
74			2	1		6	1				
75					1				1		
76											
77		1		1			1				
78					1		2		2	2	
79		2								2	
80		2		1		1	4	1	3	1	
81				1	1	1	3	2	5	3	2
82							7	1	2	2	1
83	1	3		4			2	1	8	2	5
84		1	1				4	1	7		2
85						1	1		3	2	
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96									1		
97									2		
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TABLE AQ—*Continued*

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76	1					1	1	
77			1					
78	1		2					
79	1							
80		1	2	1	3			
81		3	2	5	1		2	2
82			1	3	1	3	1	
83				5	1	2		
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NUMISMATIC NOTES AND MONOGRAPHS

No. 95



THE SILVER DOLLARS OF THE UNITED STATES OF AMERICA

BY

ARTHUR D. McILVAINE

THE AMERICAN NUMISMATIC SOCIETY
BROADWAY AT 156TH STREET
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THE SILVER DOLLARS
OF
THE UNITED STATES OF AMERICA
WITH
A SHORT SKETCH
OF
THE 1804 DOLLARS

BY
ARTHUR D. McILVAINE



THE AMERICAN NUMISMATIC SOCIETY
BROADWAY AT 156TH STREET
NEW YORK
1941

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THE SILVER DOLLARS
OF
THE UNITED STATES OF AMERICA

BY ARTHUR D. McILVAINE

* *
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FOREWORD

NO apology need be offered in introducing a subject as important as that of our own National Coinage—or even this one class of coins . . . the Silver Dollar.

The apology comes with the writer's realization of his inadequacy to do more than a small measure of justice to so worthy a subject. Perhaps this present attempt will stimulate another who would be more competent to seize the full value and the far perspective of the topic and present it in its fullest significance.

Presented here are results of the writer's twelve-year investigations of Mint Records and Congressional publications . . . studies of many collections, including his own . . . examinations of auction catalogs . . . and a vast amount of reading at libraries including that at The American Numismatic Society where always there was found sympathetic under-

standing and real helpfulness in pursuit of facts. It is, therefore, a pleasure to acknowledge obligation to Sydney P. Noe, Secretary of the Society; and to Sawyer McA. Mosser, Librarian, for their advice and assistance.

Acknowledgment is made also to the Office of the Director of the Mint, Washington . . . the Superintendent of the Mint, Philadelphia . . . the National Museum, Washington . . . and Mr. F. C. C. Boyd for general information on our coinage of Silver Dollars; and to the Massachusetts Historical Society . . . the Omaha Museum . . . Mr. Farran Zerbe . . . Mr. William C. Atwater, Jr. . . . Mr. Wayte Raymond . . . the Chase National Bank . . . and Mr. B. Max Mehl for specific information on the various 1804 Dollars. To my friend and fellow numismatist Don Graf I am indebted for the excellent photography of all the coins illustrated excepting only the 1804 Dollars which were obviously not available.

Arthur D. McIlvaine

New York, August 1941

THE SILVER DOLLARS OF THE UNITED STATES OF AMERICA

* *

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Our United States silver dollar is assuming much more importance numismatically now that economists point to the probability that this famous denomination will not be coined again. The reason for this forecast, though complex, will appear.

Mint records show that more than 855½ million silver dollars have been struck since their coinage began in 1794. At the present time there are approximately 500 million of them held by the United States Treasury; and close to 29 million "in circulation" which means they are in Federal Reserve Banks, other banks, in the hands of collectors, and actually circulating.

West of the Mississippi and south of the Ohio they are in fairly common use; and they are preferred by the transient laborers in several sections of the West.

At no time an entirely popular coin due to its size and weight, never-the-less the silver dollar attained a tremendous circulation because of a real monetary necessity during the periods of our greatest territorial settlement and development. More than once the silver dollar has been exploited politically. And, during the years of its greatest annual-average

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coinage, it proved to a surprised Secretary of the Treasury that our people can not be forced to use coins that are unwieldy and inconvenient.

It is highly interesting numismatically to trace the history of this monetary paradox if for no other reason than that its intermittent coinage and changing types give glimpses at our national development that are not completely visible in other kinds of histories.

“Dollars or units—each to be of the value of a Spanish milled dollar as the same is now current, and to contain three hundred and seventy one grains and four sixteenth parts of a grain of pure, or four hundred and sixteen grains of standard silver.” Thus did the Act of April 2, 1792, establishing our currency system, provide for the unit of silver money “for the public convenience.”

It is easy to understand why the dollar was based on the Spanish silver piece. This was always among the coins brought freely to the Colonies by buccan-
eers, West Indies traders and travelers. The Colonists’ great need for a recognized medium of exchange—and a fairly dependable supply—was one reason for its general circulation; and the heavy charges for minting kept it away from the few privately-operated mints in the Colonies.

WHY A SILVER DOLLAR

There was no snap judgment or accident about the first coinage of dollars. It is doubtful that in all the World’s history there has been a group of men of

greater mental brilliancy, singleness of purpose and sheer unselfishness than the one which spent nearly a quarter-century formulating and putting into operation the plans for our national economic and political life.

The Morris Report

After due consideration for the relative merits of a silver standard, a gold standard and a bimetallic one, Robert Morris, Superintendent of Finance, reported on January 15, 1782 to the Congress of the Confederation, "Gold is more valuable than silver and so far must have the preference, but it is from that very circumstance the more exposed to fraudulent practices. Its value rendering it more portable is an advantage, but it is an advantage which paper possesses in a much greater degree and of consequence the commercial nation of England has the recourse to paper for the purpose of its trade; although the mass of circulating coin is gold. It will always be in our power to carry a paper circulation to every proper extent. There can be no doubt, therefore, that our money standard ought to be affixed to silver."

For our new coinage, he urged the decimal system because of its simplicity, shrewdly commenting, "Whenever such things (figuring prices and making change) required labor, time and reflection, the greater number who do not know are made the dupes of the lesser number who do." He found the Spanish silver dollar the coin coming nearest to a general standard throughout the Colonies. He did not favor coining the unit of silver—the dollar.

Wrote Morris, "No coin of this size would need to be coined because it is sufficient that the value of the unit be precisely known."

About this time, Thomas Jefferson prepared some notes on "The Establishment of a Money Unit and of a Coinage for the United States." He, too, favored the Spanish milled dollar as the monetary unit and suggested dividing it into tenths and hundredths. These expressions of opinion, together with others, became the basis of a unanimous vote of approval by the Congress of the Confederation on July 6, 1785 that, ". . . the money unit of the United States of America be one dollar . . ." Five years later both Jefferson and Hamilton favored a gold standard because it had "a fixed price by weight and with an eye to its fineness" which was obvious at a time when the Spanish silver dollar under consideration possessed neither a standard of weight nor of fineness.

The National Government Takes Action

As would be expected, all these opinions, reports, ordinances, etc., were made the basis for consideration of a currency by the National Government when it met in 1789. Alexander Hamilton, the Secretary of the Treasury, soon was required to "Report a proper plan or plans for the establishment of a National Mint," which he did in January 1791. Showing a remarkable understanding of the principles of monetary science, he considered, among many other questions, the varying weights of fine silver in the many issues of the Spanish dollar and found they

averaged somewhere between 368 and 374 grains. He finally concluded that, "the unit in the coins of the United States ought to correspond with 24 grains and $\frac{3}{4}$ of a grain of pure gold and with 371 grains and $\frac{1}{4}$ grain of pure silver each answering to a dollar in the money of account." His figuring also included the existing market price ratio of gold to silver (at that time 15 to 1); by multiplying the fine gold equivalent of the dollar by 15, he arrived at $371\frac{1}{4}$ grains for silver which was also about the average of the Spanish dollar. So the ratio was considered to be 15 to 1 for all coinage purposes.

The result of Hamilton's recommendations, and of Congressional discussion, was that the first coinage law—the Act of April 2, 1792—gave us units of both gold and of silver, thus committing us to bimetallism. The reasons may have appeared sufficient at that time—gold was best suited for the development of our foreign trade while silver was for domestic use.

Thus was our silver dollar launched upon its unhappy career.

DOLLAR TYPES AND DESIGNS

During the one hundred forty-seven years since our silver dollar coinage began there have been only six different major types.* What makes these so interesting to collectors is the large number of minor variations to many of the basic six designs.

Hamilton's broad and masterly plan for our coin-

*Excluding Trade Dollars, Proofs, Patterns, different Mint Marks, and Commemoratives.

age left to the Congress, perhaps wisely, many minor details. One of these was the design of the coins; and this precipitated a bitter "debate" between the Senate, which wanted an image of Washington on the obverse, and the House, which wanted a figure emblematic of liberty. The House prevailed and ordered that, "upon one side of each of said coins there shall be an impression emblematic of liberty with an inscription of the word LIBERTY and the year of the coinage; and upon the reverse of each of the gold and silver coins there shall be a figure or representation of an eagle with the inscription UNITED STATES OF AMERICA . . . "

Otherwise the designing of the coinage was left largely to the judgment of the mint officers and particularly to the artists and engravers.

1794-1804

Early records of the first mint are not detailed enough to indicate the creator of the first dollar design. Joseph Wright, Robert Scot (or Scott), Henry Voight and John S. Gardner appear on payrolls as engravers; while Moritz Furst and John Eckstein were outsiders who did work for the Mint. Any one of them could have created the design for the 1794 dollar, as most were "artists" as well. (See Plate.)

Liberty's head on this 1794 obverse is evidently a poor copy from the portrait on the medal by the eminent Dupré, struck to commemorate the Saratoga and Yorktown victories. The eagle on the reverse

lacks realism. The weakness in the design of this first dollar is undoubtedly due as much to the lack of any authentic descriptions from which to work as to the lack of that imagination which later gave strength and beauty to the designs. Striking improvements in design began when the later issues of 1795 showed the newly conceived "fillet" head of Liberty. This design is generally credited to Gilbert Stuart, foremost artist of the period. (See Plate.)

A noteworthy change came in 1798—the timely use of the splendid "heraldic" eagle with the motto "E Pluribus Unum" which in 1795 had appeared on the half-eagle gold. This is a copy, with variations, of the Great Seal of the United States—a noble and inspiring design which came into being in 1782. The "variations" caused a furor.

Up to the time of this change, the eagle was a modest looking bird with a sprig of laurel in his beak, his talons resting on a rock, or on a mass of clouds, the whole surrounded by a palm wreath; but, the change showed the fully-displayed eagle whose right talon belligerently carried a sheaf of arrows while the left held the olive branch!

In making this grave error, the confused artist or engraver probably believed he was correcting an error of the Seal itself, not realizing that the Seal is of a true heraldic design in which the right, or dexter side is the one looking from the eagle to the spectator. By reversing this positioning to the spectator's right, the engraver actually put the warlike arrows

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in the eagle's important right talon, subordinating the olive branch to the minor left one.

This design of 1798 includes for the first time a galaxy of stars on the reverse. Strangely enough, the stars on the obverse had been from the beginning six-pointed; but, the new reverse showed stars with only five points. In this the design followed that of the Great Seal. The 1798 basic design continued with only date changes until coinage was stopped in 1804 by executive order; and was not resumed until 1840. Mint records show that there were 1,439,196 dollars struck during this eleven-year period. The edges of all bore the legend—ONE HUNDRED CENTS . . . ONE DOLLAR . . . OR UNIT.

Between 1794 and 1804 there were only three major types; although there were numerous variations to test the mettle of any collector. In 1881 Captain John W. Haseltine, a Philadelphia dealer of wide renown, described one hundred eleven different die varieties of the dollars of this period. Probably there were struck even more than this large number.

This amazing classification can be explained only by the fact that all dies—obverse and reverse—had to be cut by hand. Not a great deal was known about case-hardening or other phases of metallurgy and press-pressures were not carefully controlled so that dies sometimes cracked during use—but were not discarded at once—causing weird lines or “die-breaks” as the metal was forced into the veins of the cracked die. When a die could be used no longer, a

replacement was hand cut; and inevitably it would differ slightly from its predecessor.

1840–1873

President Thomas Jefferson stopped coinage of the dollar in 1804 to prevent its further export. Due to the law of “supply and demand,” the market price of silver had risen to a point where the fine silver in the dollar was actually worth more than one hundred cents—its face value. This circumstance gave brokers and money dealers an opportunity to export our dollars at a profit, an opportunity they were quick to seize. Taking our dollars out of circulation in this way defeated the very purpose of their coinage. (See Plate.)

With the new coinage in 1840, the silver dollar might be said to have entered upon its Golden Age. It showed that much progress in both design and manufacture had been made during the intervening years. A new mint had been built. Every possible mechanical improvement was included. Much step-by-step progress had been made in most United States coins. The greatest advancement was in the development of creative designing; and this was reflected in the appearance of the dollar upon the resumption of its coinage.

At this time Christian Gobrecht produced the graceful, classic figure of the seated, draped Liberty and adapted from our other coin designs the shield, Phrygian cap with pole, and the Greek chiton. The eagle on the reverse was an improvement over several

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of the former birds. The olive branch took its place in the right talon (from the spectator's viewpoint); but, the legend *E Pluribus Unum* was omitted for unexplained reasons.

The eagle on the reverse of the 1840 dollar is a portrait of PETER, the eagle which lived at the Mint for several years, flying about Philadelphia at his pleasure. He served as a model not only during his eventful life at the Mint, but after his untimely end, due to an encounter with a fly-wheel, he was stuffed and continued to serve his country from a glass case in the Mint Collection room. This 1840 reverse was a poor substitute for the reverse of several Gobrecht patterns which showed a heroic eagle in flight amid a galaxy of six-pointed stars of differing magnitudes. (See Plate.)

There are catalogers and collectors who choose to include several of these Gobrecht patterns with our regular coinage. The only justification for this would be the fact that a number of impressions of these designs were struck. Excellent though these Gobrecht patterns be, it would seem logical to treat all patterns as separate and distinct from our regular coinage.

Patterns are an interesting and important study by themselves. Most of our coins originate from patterns conceived by engravers employed at the Mint, or commissioned by our government to prepare designs. Sometimes the designs are selected as a result of an open competition among artists and sculptors. This has been the practice, in general,

even before the United States Mint was formally established. Present laws pertaining to our coinage do not permit frequent changes in the designs of our coins but require that a number of years elapse before a change may be made in any essential detail, excepting only the dates.

During the early years of the United States Mint, most of the engravers were brought from Europe for the purpose of producing our coinage or supervising the work. Their task was not an easy one as there were many denominations of coins to be designed in each of the three metals: gold, silver and copper. Our first silver dollar developed from patterns; and through the years that followed, the procedure has become well defined. New suggestions relative to devices, mottoes, or designs are worked into dies and patterns struck from these dies. The patterns may be struck in any metal, so we find patterns of dollars struck in copper, aluminum and silver. Any basic change in designs of our coins must be authorized by the Coinage Committee of Congress which makes its selections from the patterns, trial pieces, or experimental pieces submitted. This is why at times it seems that the more attractive patterns are not always those selected for the regular coinage.

The Coinage Act passed in 1837 reduced the weight of the dollar from 416 grains of standard silver to $412\frac{1}{2}$ grains and changed the fineness from 893/1000 to 900/1000, keeping the weight of fine silver the same as before (371.25 gr.). The diameters of our dollars, (the "sizes"), have always been

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expressed in one-sixteenth inches. The first issues were 24½ size; the 1798 fifteen-star variety was made 25 size; the present standard of 24 size was established with the coinage of the 1840 dollars . . . 24 size means really a diameter of one and one-half inches.

The 1840 dollar design continued with only date changes until 1873 when coinage was stopped again after some 6½ million dollars had been struck. The inscription "In God We Trust" was added in 1866 as a scroll over the eagle on the reverse after public appeal had stirred the Treasury Department to have this appear on our coins. (See Plate.)

1878-1904

The numismatist whose collection includes all types of the silver dollars probably has noticed the sharp advancements in designs and pleasing refinements in details as type followed type. In the opinion of many whose judgment should be respected, the 1878 dollar is the most handsome type of all. (See Plate.)

Known as the "Bland" or the "Morgan" dollar, this 1878 type followed the introduction of the ill-fated Trade Dollar (1873-85) to become the most prolifically coined and widely circulated of all our various dollars. Richard P. Bland ("Silver Dick"), United States Representative from Missouri—a silver producing state—sponsored the legislation under which this dollar was produced. George T. Morgan, of the Mint staff, created the design, dis-

playing great artistic ability and, in addition, a fine sense of humor.

Both are evident in his design, the humor of which is in his crowning Liberty with a symbolical group of agricultural products; in his cleverly concealing "M" on the truncation of the bust (obverse), also on the bowknot around the wreath (reverse); and by his reducing the number of feathers in the eagle's tail from eight to seven during the first year of issue. The Great Seal contained nine feathers, its adaptation to the 1798 dollar contained nineteen. Gobrecht carefully avoided this 'momentous question' by tucking the tail feathers underneath the contents of the talons. This Morgan shift in feathers caused a most surprising rise in this dollar's catalog prices. For no obvious reason the legend *E Pluribus Unum* was moved from the reverse to the obverse.

During the era of this dollar there were struck about 569 million before its interesting and important coinage came to an end in 1904—which also marked the actual economic end of the silver dollar.

1921–1928 and 1934–1935

The resumption of dollar coinage in 1921 was an obvious attempt to force upon a newly risen generation a coin that never had been anything more than a monetary mistake. By this time the dollar was more of a tradition than a necessity.

Two types appeared during 1921. The first was a revival of the well-known Morgan coinage; and the

second was designed and struck to commemorate the Peace Treaties signed after the 1914–1918 World War—the first time in the World's history that a coin was struck to celebrate a Peace. (See Plate.)

Anthony de Francisci was commissioned to prepare the final designs of this Peace dollar, and is considered to have done an outstandingly fine work. There are some who hold that there is a startled or frightened expression on the face of the figure.

Coinage of silver dollars during this ten-year period totalled about 277 million pieces; yet there are already marked shortages of certain dates. Peculiarly, many of the 1928 dollars show a bevel on the milling at the edge, making the coin seem thinner than other of our dollar coinages. In 1928 coinage stopped; only to be resumed again in 1934 and 1935 but not at all mints. Thus the dollar was coined during only eighty-two of the one hundred forty-seven years since its first issue in 1794.

TABLE

Size, Weight and Fineness of the Various United States Dollars

Date	Size*	Weight	Fine Silver	Alloy	Fineness
1794	24½	416 grains	371.25 gr.	44.75 gr.	893/1000
1798†	25	416 grains	371.25 gr.	44.75 gr.	893/1000
1840	24	412½ grains	371.25 gr.	41.25 gr.	900/1000

*Size is in sixteenths of an inch.

†The "8+7" star variety.

ECONOMIC AND POLITICAL ASPECTS OF THE DOLLAR

Generally, a free people can be depended upon to work out most of its own economic problems—if it is allowed to remain free—and the solutions to these problems become, automatically, economic laws. When a people is not free it takes much longer to make economic adjustments, and the process is more painful.

It may be considered a commonplace now-a-days to refer to the early colonists in America in connection with their practices of exchanging furs, tobacco, bullets, grains, etc., for other of their needs. This was but a step in the solution of their economic problems. This “Barter and Trade” became inadequate very soon. So failed also the make-shift use of foreign currencies brought in through trade. Coinages of the several Crown Colonies had varying values in neighboring colonies thus crippling inter-colony trade.

The War for our Independence was fought largely to secure economic freedom for the Colonies. Consequently, because of a series of acute economic needs, we were enabled to solve some of our problems by establishing a national mint and a national coinage, thus giving to a united people its first medium of exchange that would pass at par in every one of the thirteen political groups that comprised the United States.

It is true that for thousands of years other peoples had been attempting solutions of similar problems. Their contemporary currencies did not reach the Colonies in adequate quantities or on a workable basis of exchange. For eight hundred years China had been experimenting with paper money—at times quite disastrously to the state of her finances.

Many theories and experiments, principles and practices had been recorded for study by the men who were conscientiously groping for a true basis of a national monetary plan even while a unified nation was little more than a great hope. These were the recorded experiences that enabled Robert Morris to evolve his amazing plan for a national metallic currency when required to do so by the Congress of the Confederation on January 7, 1782. He produced the plan in eight days.

Had this Morris program been adopted in its entirety it might have saved our nation endless monetary woes. Morris conceived of a decimal coinage in denominations comparable with the English system (pounds, shillings and pence) as well as with the Spanish system. The coinage proposed by Morris would make it an easy matter for our people to think of both the English and the Spanish monies in terms of our coins. This ease of conversion would tend to drive out of circulation all foreign coins, leaving only our own. Morris wanted a dollar, or unit, in silver; but, was opposed to coining it, having seen how the Spanish silver dollar was cut into sections of halves, quarters and eighths to provide small

change. True enough, his smallest coin was entirely too small for practical use ($1/1440$ of a dollar); but, later on, our half-cent, two-cent, three-cent and twenty-cent pieces also proved impracticable.

However, his reasoning was far below its usual excellence when he recommended a silver standard. As a student of history and a keen observer of current movements, he should have perceived that a gold standard was the only one adequate for a commercial nation such as we were becoming. He should have seen that gold had always held a deep fascination for mankind and this, plus its ductility, natural alloying with other metals, and virtual indestructibility as a metal, were qualities that assured its use as money during all the many hundreds of years there had been commerce among human society.

Jefferson favored a gold standard; and Hamilton also leaned in that direction, although his plan to the National Government recommended coinage of both gold and silver as legal tender, thus opening the way to our domestic currency confusion that is not removed even today. In 1873 we were nominally forced to demonetize silver and become a "Gold Standard" nation. The Acts of both 1834 and 1853 are credited with leading toward this demonetization, if not actually accomplishing it.

Economic law worked to the disadvantage of our new double-standard currency almost from the first. By the end of 1800 there had been coined about one million dollars in gold eagles, half-eagles and quarter-eagles (10's, 5's and 2.50's) and about one and a half

million in silver—mostly in dollars. Very little of either coinage remained in circulation. Investigation showed that money brokers were buying our money and that it was being exported in coin or melted into bullion for the reason that both the gold and the silver coins were worth more as metals than their face values. Because of this traffic in our money, coinage of eagles was stopped in 1803 and dollars in 1804 by Secretary Madison, and later by order of President Jefferson.

This same sort of undervaluation of our coins occurred again and again; the remedy in all cases was to reduce either the gold or the silver content. This was never the final solution because no amount of legislative tinkering could make the gold coinage and the silver coinage stay in the relative values originally planned—15 to 1 at first, then finally legalized at 16 to 1; but, at times reaching 35 to 1. An economic law formulated two hundred years before proved itself time after time . . . where two metals were circulating together as legal tender, one metal would always be changing its value in relation to the other, so either creditors or debtors would always be suffering. Even Congress could not repeal a fundamental economic law.

A glance at mint coinage records during those early years would have shown anybody that gold was the preferred metal of commerce while silver halves and small coins were necessary only for minor domestic transactions and might better be subsidiary

to gold, thus leaving us only a single monetary standard—Gold.

Morris, Jefferson and Hamilton could not have foreseen the increases in the world supply of gold resulting from discoveries of the metal in North Carolina, Virginia, Georgia, Africa, Australia, California and Alaska; otherwise they might have committed us to the Gold Standard without hesitation. Neither could they have foreseen the tremendous production of silver in seven of our states, providing not only the metal but providing also fourteen Senators and many Representatives who saw to it that the National Treasury was kept well supplied with the precious metal.

In such a situation almost anything could happen—and did. Paper money began to take the place of both gold and silver in our banking and in our domestic commerce. Paper money had been tried before; but, so much of it was worthless that all of it was always under suspicion. Franklin printed some bills for use by the Colonies and remarked, “. . . it was a very profitable job and a great help to me.” Years later he argued that it (paper) was a good thing, “but I now think there are limits beyond which the quantity may be hurtful.” Poor Richard was not without a sense of humor.

Paper money had been printed for use in the Colonies during the Confederation. It was really a form of “Printing Press” money—not backed by adequate authority to tax or by other forms of reserves. It soon became “not worth a Continental”

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and its low redemption value kept down its acceptance by the people. However, in the first year of the War of the Rebellion—1861—(before the plethora of silver), the prices of gold and silver rose to such heights that coins all but disappeared from sight. As the war continued, so did the government expenses until finally the Treasury was virtually empty; a dilemma that was met by issues of paper money. Soon it was issued in denominations of less than one dollar . . . 50 cents, 25, 15, 10, 5, and even 3 cents—all known as Fractional Currency or, popularly, as “Shinplasters.”

The convenience of paper money was at once apparent to all who used it; and once the people had confidence that the paper was amply backed by reserves of gold—and that they could go to almost any bank and convert the paper into metal coins—paper became more and more widely accepted. Finally, paper largely supplanted the use of high-denomination metal in the ordinary daily domestic purchases. This is among the main reasons why the silver dollar may not be coined again.

Another strange political manipulation in silver occurred in 1918. Following the war an acute shortage of silver developed in India causing the British Government to come to us for silver. This shortage in silver advanced the price so that the silver content of our dollar was worth practically one dollar; thus providing a splendid opportunity for our Treasury to retire a vast number of silver dollars and defray the costs of their coinage—generally a loss to the Nation.

But, this was too good an opportunity for the legislators from silver states to overlook. Instead of selling their silver as bullion at a fair profit, they forced through a bill turning "not more than 350 million dollars" into bullion for India at "a price of not less than \$1.00 per fine ounce"—then included an obligation for our National Treasury to purchase a like amount of silver, at a price of \$1.00 per ounce, from American mine owners and the coining of the same number of pieces that had been sold. The price of \$1.00 was much higher than the prevailing price here for foreign silver. Public taxation again had protected (subsidized) a private industry. Silver dollars to the number of 260 million were converted into bullion under this Act, thus causing a shortage in many dates that is naturally reflected in premium prices in the numismatic market.

Some collectors, fortunately, are possessed of specimens of the Bryan "Wagonwheels" which were privately struck to demonstrate his "16 to 1" political creed. It is just as well, perhaps, that he never attained to a position where he could put into practice his pet monetary theories.

Much more could be written on the economic and political phases of silver bullion and the silver dollar particularly pertaining to legislation within the past several years; but, this does not relate numismatically to the silver dollar.

Stating it briefly: New laws affecting our currency have been passed on an average of one every eight years since the original Act of April 2, 1792 . . .

The fine carrying convenience and relative monetary stability of our paper money have probably forced the silver dollar out of coinage . . . yet, the high cost of printing one dollar silver certificates (one dollar bills) was the reason advanced by Secretary Mellon for recoinage of the dollar in 1921 . . . It has been principally the political functioning of organized minorities that has given numismatists a coin of almost unlimited possibilities as an item for collecting—economic law would have forced it out of coinage perhaps as early as 1804.

It has been said quite fittingly, "History teaches that we do not profit from the teachings of History."

THE FABULOUS 1804 DOLLAR*

It is doubtful whether any other coins—even some much rarer ones—have been surrounded by more romance, or more general interest, than that which attaches to the “original” 1804 dollars. The mystery of the disappearance of practically the entire coinage only adds to the fascination—and to the extremely high valuations—of this coin. There have been paid prices of one thousand, two thousand, three thousand six hundred and even four thousand, two hundred and fifty dollars for one of these rarities. Offers of five thousand dollars for a specimen have been refused.

Mint records show that 19,570 silver dollars were coined in 1804. The entire number was produced between January 7, and March 28, 1804—nor is there any authenticated evidence up to this time to dispute this figure. Seven of them were reserved for assay. Today there are only six of the coinage known to be in existence; plus at least seven additional ones dated 1804 with a different reverse and edge, giving weight to the belief that these were struck at a later date, probably 1858. The dies were not finally destroyed until the winter of 1868–69. (See Plate.)

*Note: The writer purposely omits the condition of these dollars, believing that to be a negligible factor in view of the importance of the group as a whole.

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There are many opinions and conjectures about the balance of the coinage, of which the following are frequently mentioned:

They were immediately exported as bullion or as coin—maybe through connivance of an employee of the government . . .

All were lost at sea on a China-bound vessel . . .

All were melted at the mint . . .

All were exported to the Far East . . .

All were paid as tribute to the Barbary pirates . . .

All were captured by the British . . .

They were stolen and now lie buried . . .

None was coined in 1804.

Those known to be in existence are gems prized almost above price by their owners. Attempts have been made to make casts of the coin. The writer has seen several altered dates of the 1801 dollar in which the second figure 1 of the date was converted by some means into a figure 4; but, a strong magnifying glass generally reveals the fraud even if there be no other distinctive characteristics whereby a genuine 1804 can be distinguished.

Captain John W. Haseltine, the Philadelphia dealer, who in 1881 published his *Type Table* minutely describing many varieties of early U. S. silver pieces, thus described an 1804 dollar: "No. 1; the upper left star is distant from the L in 'Liberty,' the upper right star has two points almost touching the Y (this is one of the best indications of a genuine 1804 dollar, as it occurs in but very few of the dollars of other dates); the lower left star points to the

center of the curl protruding farther to the rear; the mouth of Liberty open; the 1 in the date is very close, almost touching, the curl; the 4 is also very near the bust; the horizontal part of the 4 has no crossbar to it; rev., the eagle's beak closes exactly on the point of the star; the leaf in olive branch points to the part of the lower stand of the I nearest to R in AMERICA; 13 arrows in eagle's claw; the star in eagle's beak also touches scroll between the letters B and U in 'PLURIBUS.' "

Although Captain Haseltine does not mention it, the edges were lettered "ONE HUNDRED CENTS, ONE DOLLAR, OR UNIT" as were all our dollars from 1794 to 1804. Perhaps Haseltine wrote his description from memory, or from notes, rather than from an actual 1804 dollar for he omitted probably the most distinguishing feature of the originals—the legends on the reverse. The spacing of the letters "STATES OF" above the ring of clouds in the originals is such as to center the "O" and "F" over adjacent clouds; but, in most of the restrikes the "O" is directly over a notch between two clouds, and the "F" is noticeably closer to the wing tip; although there are specimens of these restrikes with the "original" reverse. (See Plate.)

When the restrikes were made, the original obverse was used but seems to have been recut so that the stars and other details are sharper. The original "edge dies" or "collars" were not preserved complete, consequently the edges of these restrikes are either plain or contain repeated parts of the edge

dies in order to fill the edge. Three of these restrikes were with difficulty recovered by the mint; two were destroyed and the third was placed in the mint collection where there was already one of the originals. Other "restrikes" have remained in the hands of collectors.

One of the very interesting phases of these 1804 dollars is their pedigrees—their individual histories that not only help establish authenticity, but constitute as well "abstracts of title" tracing the coin from its original owner much as a piece of land is "abstracted."

Of this practice, the so-called "Dexter Dollar" is an excellent example: It was discovered in the collection of Adolph Weyl, a Berlin (Germany) dealer, by the Chapman Brothers (Philadelphia dealers) who bought it from him in October 1884 and offered it in their auction sale May 14, and 15, 1885. Here it was bought by Mr. J. W. Scott (another dealer) for Mr. J. V. Dexter of Denver, Colorado, at a price of one thousand dollars, and it remained in his possession until 1902. Hudson and Henry Chapman started the pedigree of this dollar because there is now no evidence that Weyl possessed any history of its ownership from 1804 to 1884. The Chapmans submitted their Berlin purchase to the U. S. Mint authorities in Philadelphia who, after comparing it with the known original in the "Mint Cabinet of Coins," pronounced it genuine in their judgment. This judgment was certified to in 1887 in affidavits made by A. Loudon Snowden, Superintendent of the

Mint; by Jacob B. Eckfeldt, Assayer, and R. A. McClure, Curator of the Cabinet Collection; and by Patterson DuBois, one time assistant assayer.

In settling Mr. Dexter's estate, the Trust Company disposed of this coin in 1903 to Mr. H. G. Brown of Portland, Oregon, who was supplied with the affidavits plus a letter from Mr. R. G. Parvin, secretary of the Trust Company, certifying that the dollar was the one owned by Mr. Dexter. The price paid was eighteen hundred dollars. In 1904 Mr. Brown disposed of his collection and the dollar was bought for the account of Mr. Wm. F. Dunham of Chicago, at a price reported to be eleven hundred dollars. Mr. Dunham received, and preserved, all the pedigree documents. The Dunham collection was auctioned by B. Max Mehl on June 3, 1941; and the "Dexter" Dollar was sold for a reported price of four thousand two hundred fifty dollars. (See Plate.)

The "Dexter" was placed No. 4 on the list of 1804 dollars compiled by the Chapman Brothers when they cataloged their sale in 1885. It would contribute considerable of value to numismatic history if equally complete biographies could be prepared on the other five originals. In the hope that this may be achieved at some future time, the following histories, incomplete as the writer knows them to be, are offered as a basis.

The Mint Cabinet Specimen, No. 1

On January 1, 1912 there was submitted to the Director of the Mint, Washington, D. C., a "Catalogue of the Coins, Tokens and Medals in the

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Numismatic Collection of the Mint of the United States at Philadelphia.” In this authoritative work T. L. Comparate, the Curator, describes this 1804 original coin as similar to the 1798 dollar “but with a beading around the borders” and, “The edge . . . is very faintly struck, the legend being only legible, while the condition of the specimen is otherwise ‘uncirculated.’” This beading is merely a variant of that common to all dollars, starting with the 1794 type.

Just where this Mint Collection dollar came from is not clear. It may have come from the seven put aside for assay; or, it may have been bought back from the regular coinage. The Mint Collection is the growth from a nucleus gathered by Adam Eckfeldt whose name appears on Mint payrolls of 1795 as “Die Forger and Turner.” It was his grandson who made affidavit about the “Dexter” in 1887 at the same time Mr. Snowden certified that the Mint specimen had been in the Collection for more than forty years and had always been considered an original. Adam Eckfeldt’s son, Jacob R., wrote a complete and scholarly book on processes and procedures at the U. S. Mints, published in 1842 (see Bibliography), in which he cataloged the Mint Collection and illustrated an 1804 dollar; yet he did not specifically mention it in the text! Why did he not refer to it as of great rarity? Was there then only the specimen he illustrated? Did he know there was a quantity of them in the Mint vaults? These are questions which, after one hundred years, still intrigue us.

The "Mickley" Dollar, No. 2

This "1804 original" first appeared in 1867 when Mr. Joseph J. Mickley sold it to Mr. W. A. Lilliendahl for seven hundred fifty dollars. Mr. Mickley stated that he secured the coin many years before from the Bank of Pennsylvania, Philadelphia. It does not seem to have a "name;" so for convenience the writer attaches the name of its first recorded owner. Mr. Lilliendahl disposed of it to Edward Cogan who sold it in 1868 to Mr. W. S. Appleton, a New England collector. Since 1905 the dollar has been in the Appleton Collection in the Massachusetts Historical Society, Boston, Mass. The meager records of this dollar indicate few prices during the transfers of ownership.

The "Parmelee" Dollar, No. 3

This might be designated also as the "Aged Lady" dollar, because a person thus described secured it at the Philadelphia Mint many years before she disposed of it in 1868 for an unnamed sum to E. H. Sanford. It changed hands again in 1874 when L. G. Parmelee paid seven hundred dollars to secure it from the Sanford collection. Mr. Byron Reed bought it in 1892 from Parmelee for five hundred seventy dollars; and now it is in the "Byron Reed" Collection at the City Museum, Omaha, Nebraska.

The "Dexter" Dollar, No. 4

Heretofore described, pp. 28 ff.

The "Manning" Dollar, No. 5

This has had a most active career since first it

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came to public notice in 1875 in possession of Colonel M. I. Cohen. No less than eight people have possessed it for longer or shorter periods. Another of the mysteries of the 1804 dollars is that they remained in obscurity for as long as three-quarters of a century before making an appearance—and then generally only to be offered for sale.

Where Col. Cohen got his specimen is not evident in the records. According to his own statement, he had located it in possession of a resident of Richmond, Virginia, and finally purchased it. He sold it in 1875 to H. S. Adams for a reported price of five hundred dollars. In 1876, the Adams Collection passed into the hands of L. G. Parmelee who sold this dollar to W. B. Wetmore in 1878 for six hundred dollars. Some years later, in 1906, it became the property of James H. Manning; then was owned by Elmer S. Sears from whose collection it was obtained by B. Max Mehl, who sold it in 1921 to Mr. Lammot du Pont who, it is believed, still has it in his collection.

The "Stickney" Dollar, No. 6

This dollar is unique in several particulars. Where it came from and how it was first secured by a private individual are both matters of definite record. It has changed hands fewer times than any other original. It remained in possession of one collector longer than any of the others; and it brought a price that stood as a record high for a dollar until 1941. (See Plate.)

Matthew A. Stickney was among the first of those

whom we may justifiably term "great collectors." His keen appreciation for real and potential rarities is evident in the catalog of his collection.

Mr. Stickney secured the dollar which bears his name at the U. S. Mint in Philadelphia on May 9, 1843, giving in exchange for this Mint duplicate several coins including the unique and priceless 1785 gold "Immune Columbia"—struck over the George III guinea of 1775. Because it came from the Mint Collection in 1843, this dollar should stand as No. 2 on the Chapman list, which list, however, is not "official" in any sense of the word and evidently was made by them for their own use.

The dollar remained in the Stickney Collection for nearly 65 years until in 1907 it was sold by S. Hudson and Henry Chapman to Colonel J. W. Ellsworth for the reported price of three thousand six hundred dollars. The next change of ownership occurred in 1923 when the coin became part of the Wm. C. Atwater Collection. It seems more than a coincidence that Mr. Atwater secured this famous coin. He was truly a collector at heart and as a young man had formed a collection of American minor coins. As he grew older he gradually added choice pieces of all denominations, climaxing his long career as a collector and student of numismatics when he bought the "Stickney" Dollar. Later, Mr. Atwater gave his entire collection to his three sons.

One cannot but be amazed that such a small handful of silver dollars could represent so much value . . . sentimental at least in part . . . and rouse so much

possessive instinct; it is all the more astounding when one recalls that the silver content was never worth more than one dollar and ten cents and is worth now only about twenty-three cents. One splendid example of the law of supply and demand.

In 1804 the equipment at the U. S. Mint was inadequate for the tasks imposed upon it. The technique of coining was not yet fully developed; in consequence, many of the early dollars are not struck evenly. This is particularly true of the 1804 dollars for none is a fully struck piece, there being also considerable variation in weight from the legal standard of 416 grains. The Mint Collection specimen weighs 415.9 grains; the Dexter, 415.307 grains; the Manning, 410.75 grains; the Stickney, 415.307 grains; and others as low as 411 grains. One of the restrikes weighs only 381.5 grains.

It is almost one hundred years since Matthew A. Stickney secured from the U. S. Mint the 1804 dollar which ever since has borne his name. Time has but made keener the interest in these notable coins. Collectors and dealers have travelled thousands of miles—have crossed oceans and continents—in efforts to secure these pieces.

In passing the 1804 dollars from owners to owners, probably more money has changed hands than over any similar number of coins in the World's history. Yet, there are today collectors who hope the rest of that 19,570 coinage will turn up so that each collector of U. S. silver dollars may have an original 1804 in his cabinet.

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1. First Silver Dollar Designed—Struck in '1794.
2. The 1795 Fillet Head—The second major design.
3. The Heraldic Eagle Reverse of 1798—The third major design.
4. The 1840 Dollar—Designed by Christian Gobrecht.
5. Great Seal of The United States—Designed in 1782.
6. The 1866 Dollar—First to bear the legend "IN GOD WE TRUST."
7. The "Bland" Dollar of 1878—Designed by George T. Morgan.
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10. The "Stickney" 1804 Dollar.
Photograph by courtesy of Wayne Raymond
11. The "Dexter" 1804 Dollar.
Photograph by courtesy of B. Max Mehl
12. The "Rosenthal" 1804 Restrike.
Photograph by courtesy of The Chase National Bank

SILVER DOLLARS OF THE UNITED STATES OF AMERICA



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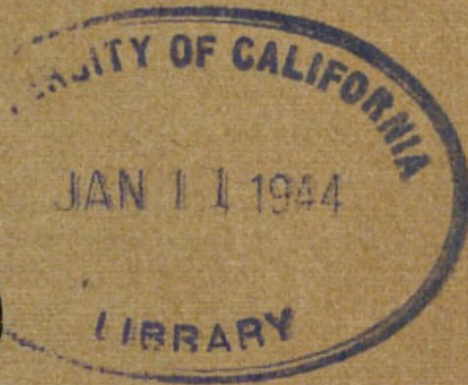
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NUMISMATIC NOTES AND MONOGRAPHS

No. 96



KOLOPHON AND ITS COINAGE: A STUDY

BY

J. G. MILNE

THE AMERICAN NUMISMATIC SOCIETY
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KOLOPHON AND ITS COINAGE: A STUDY

BY
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THE AMERICAN NUMISMATIC SOCIETY
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KOLOPHON AND ITS COINAGE: A STUDY

BY J. G. MILNE

Before the interruption of international relations in Europe, I was collecting material for a monograph on the coinage of Kolophon: it seems improbable that I shall be able to complete it on the original plan; but it may be worth while to put on record the facts ascertained and the conclusions they suggest. I had examined the specimens at London, Oxford, Copenhagen, Munich, and Vienna, and obtained lists and details from Cambridge, Glasgow, Paris, Berlin, Munich, Gotha, Athens, and Leningrad, as well as from America: and a review of this material gave reason for thinking that it was fairly representative, when taken in consideration with what has already been published. Many of the issues at Kolophon must have been small, as they are represented only by single specimens in my list; and it is probable that such single specimens of other varieties exist unpublished in collections of which I have no particulars; but on the whole it is not likely that these would affect the general conclusions reached. The most important of these collections is probably that at Stamboul, which contains the coins from the excavations of 1921-2: of these Mr. Noe has kindly furnished me with a summary from notes which he took, and, though these notes have not enabled me to include the specimens in the catalogue, they justify

the opinion that there is nothing among them which would not fit into the scheme framed here. It is in the hope that some younger student may be able to put more flesh on the skeleton that I publish this study. While doing this, I have to express my thanks to the Keepers of the collections named, as well as to Mr. Noe, for their courtesy and kindness in supplying information, including casts: the latter are deposited at Oxford and are available for consultation.

Kolophon, unlike most of the early Greek settlements in the west of Asia Minor, lay at some distance—about eight miles—from the sea, in a position which looked east rather than west: it was evidently placed to command the fertile plain of the Kaystros, and its interests, so far as records of them exist, might be described as rural. There is no indication that any important manufacturing industry was pursued there, or that the city possessed any ships: the chief occupation seems to have been horse-breeding, and the main exports overseas were pitch, mastic, and resin. Its harbour, Notion, was a small one, and not situated where it could capture any part of the trade that came down the river-valleys from the interior of the country: though some of this trade may have passed through Kolophon, it probably went on to the gulf of Smyrna. The effects of this position can be traced in the coinage.

Kolophon claimed to be one of the first Greek foundations in Ionia: according to Pausanias (vii. 3), it was originally occupied by Cretans, who were

joined by refugees from Thebes after the 'Dorian invasion' of Greece. This statement finds some support in the discovery of a necropolis with Geometric pottery in the American excavations on the site in 1921-2 (Picard, *Ephèse et Claros*, p. 729). But, though it is said to have joined in the foundation of Ephesos and Smyrna, it did not take any important part in colonisation far afield: the only permanent trading station which is ascribed to it is Myrleia, the later Apameia, in Bithynia (Mela, i. 99). After it was conquered by Gyges of Lydia, about the beginning of the seventh century B.C., refugees are said to have settled at Siris in Italy (Strabo, 264): others went to the mouth of the Strymon, to work the gold-mines (Suidas, s. v. Χρυσὸς Κολοφώνιος), and Thucydides (V. 2) mentions a Κολοφώνων λιμὴν, near Torone, in his account of the operations of Kleon: these settlements, however, do not seem to have maintained any close connexion with the mother-city. Kolophonians are mentioned in Egyptian documents from various localities and of various dates, from the mercenaries of Psamtik II, who scratched their names at Abu-simbel (Tod, *Greek Historical Inscriptions*, 6. No. 4), to an associate of Apollonius, the finance-minister of Ptolemy II (P. Zeno, Cairo 59003, 20), but they do not appear to have been engaged in trade: Kolophon was not one of the twelve Greek cities which shared in the privileges of Naukratis. The only suggestion of a business connexion between Kolophon and Egypt is to be found in a measure known as Κολοφώνιον, which

occurs in papyri of the Roman period: it is not mentioned elsewhere, and its origin is unexplained, but it may be derived from the import of pitch and resin: these were possibly shipped in containers of a standard size, which were used by the Egyptians as measures, like petroleum-tins today: a similar process can be traced in the measures known as *Ῥῶδια* and *Κνῶδια*, derived, no doubt, from the jars in which wine was imported. That Kolophonian resin still went to Egypt in Roman times appears from the mention of *Κολοφωνίας μάλαγμα* in a list of drugs of the third century A.D. (P. Grenf. i. 52, 6): so the name of the measure may not have been of old standing.

The sack of the city by Gyges destroyed its prosperity for a considerable period: before that it could be compared for wealth with Sybaris (Aelian. V. H. i. 19), and it is quoted, with Magnesia and Smyrna, by Theognis (1103-4) as ruined by ὕβρις: Aristotle (Pol. 1290b) says that the bulk of the inhabitants were possessed of large property before the Lydian wars. The persistent policy of the Mermnad Kings of Lydia in favour of Ephesos was naturally detrimental to Kolophon, and the Persians were regarded there as liberators after their overthrow of the Lydian kingdom: this friendship with Persia evidently continued in the fifth century B.C.; and even after the Athenians had established their hold on the Ionian coast, their control of Kolophon seems to have been precarious. The trade with Persia was probably more important to the Kolophonians than that with Greece, which would account for their reluc-

tance to break with Persia: in the first flush of success of the Athenian Empire, the Greek party might control the city, but by the time of the Peloponnesian war it had passed over to the Persian. The first assessment of Kolophon in the tribute-lists at Athens was three talents, but in the third this was halved: in 429 B.C. the city was occupied by the Persian general Itamenes, on the invitation of one party of the citizens, and the others retired to the harbour-town of Notion, but there again quarrelled among themselves, with the result that Persian influence dominated Notion also until 427, when the Athenian fleet under Paches put in there and established the pro-Athenian Kolophonians in the government under Athenian leaders (Thuc., III. 34). There is, however, no suggestion that Kolophon was recovered for the Greeks, nor that they attempted to recover it, till 409, when Thrasyllus landed at Notion and marched up to Kolophon, where he was joined by some of the inhabitants and made a raid into Lydia; but when the Persian cavalry arrived on the scene, he withdrew to Ephesos, and presumably left Kolophon to its fate (Xen., Hell. i. 2).

The history of Kolophon in the fourth century B.C. is a blank, so far as literary sources are concerned: but the excavations conducted on the site in 1921-2 have shown that the city must have been flourishing. No detailed report has been published as yet, but the summary account in Bull. Corr. Hell. 1922, p. 549, indicates that there was extensive rebuilding in the old quarter and what may have been

a new quarter on the north-east in the plain. Just before the end of the century the citizens determined to build a wall round the *παλαιὰ πόλις*, and an inscription edited by B. D. Meritt (*Amer. Journ. Phil.* 1935, 358 ff., No. 1), which may be dated to 307 or 306, gives an impressive list of subscriptions contributed for this purpose. This wall is probably the one of which considerable remains still stand: Schuchhardt (*Athen. Mitth.* 1886, 398 ff.) judged that it might have been built shortly before or after 300, and that it showed no signs of later reconstruction. At the time of the inscription the city was under the control of Antigonos, but in 302 Prepelaus, after reducing Ephesos, captured Teos and Kolophon for Lysimachus (*Diod. Sic.*, xx. 107), and for the next twenty years it formed part of his Asiatic domain.

The strategic position of Lysimachus in Ionia was based on command of the sea-coast, and for this purpose Kolophon was unimportant: so he removed part of the inhabitants, together with some of those of Lebedos, to Ephesos, which, with Smyrna, furnished his keys for the district. There is no evidence that the city was completely depopulated: it was certainly of some importance later in the third century, and it may be suggested that when, after the defeat and death of Lysimachus in 281, it came into the hands of the Seleucid kings, whose authority was exercised from the interior of the country, it resumed the position which it had held in relation to the Persian kingdom as a station on the trade-route down to Smyrna, which would be the more valuable

because communication with Smyrna by the road through Sardis would be open to possible interference from Pergamon in the event of disputes between Seleucids and Attalids. In the middle of the century it became even more essential to the Seleucids: when the Ptolemaic forces had occupied Miletos, Ephesos and Lebedos, Kolophon must have been an important frontier garrison-post protecting the road to Smyrna, Erythrai, and Klazomenai, which remained Seleucid. A further hint as to its relation to Smyrna is given in the account of Polybius (5.77.5) of the campaign of Attalus I against Achaëus: after Attalus had taken Smyrna, he did not advance further south, but ambassadors came to him from Teos and Kolophon.

It has frequently been stated that Kolophon was virtually destroyed by the depopulation under Lysimachus, and that the later Kolophon to which references are occasionally made by historians and geographers was a New Kolophon on the harbour: consequently that the Kolophonian coins of the second and first centuries B. C. and of the Roman Imperial period were really of this New Kolophon. This statement appears to be due to a misapprehension, as there is definite evidence that a city continued to exist on the old site of Kolophon: it may have had changes in its relationship to the harbour-town of Notion, and have lost some of its status in comparison to that town, but even this is not certain. In the fifth century B. C., Notion appears in the Athenian tribute-lists separately from Kolophon,

and it is probable that Athenian policy would encourage the independence of the harbour-town, which they could control more effectively than the inland city, as the passage of Thucydides already quoted shows: but Aristotle evidently regards the two as being normally linked, in spite of occasional divisions. He takes Kolophon and Notion as an example of the difficulties which might arise where the country was not naturally adapted to preserve the unity of the state, and speaks of the quarrels of the two communities (Pol. 1303b). Theopompus also treats Notion as an outlying suburb of Kolophon — Χωρίον προκείμενον τῆς Κολοφωνίων πόλεως (Fr. Gr. Hist. II B 563): and in the third century, though Notion seems to have become known as Kolophon-on-the-sea, the old city still existed: an inscription of Magnesia (Kern, *Inscr. von Magnesia* 53) refers to Κολοφώνιοι οἱ τὴν ἀρχαίαν πόλιν οἰκοῦντες and Κολοφώνιοι ἀπὸ θαλάσσης in the same manner. The ἀρχαία πόλις can hardly be a new term to designate the remnants left by Lysimachus, even if it is not the equivalent of the παλαιὰ πόλις of the building-inscription of 307–6 quoted above: and neither here nor elsewhere is there any mention of a New Kolophon: in fact, the language of these passages suggests a desire to emphasize the Kolophonian influence in Notion. Another inscription (B.C.H. xxxix. 36) of the same period, indicates that the two cities had a *sympoliteia*. The same trend of thought appears in the records of the action taken by the Roman commissioners after the defeat of Antiochus at Magnesia,

when they declared the inhabitants of Notion free: Polybius, the best authority, speaks of τοὺς τὸ Νότιον οἰκοῦντας (21.46.4), which Livy later modified to 'Colophonii qui in Notio habitant' (xxxviii. 39). (The alteration of the text of Polybius to Κολοφωνίους τοὺς τὸ Νότιον οἰκοῦντας, to make him conform to Livy, has no MS. authority and is quite arbitrary: Polybius is far more reliable than Livy in regard to precision of terminology. The value of Livy's evidence about Kolophon can be judged by his statement that Notion was two Roman miles from old Kolophon (xxxvii. 26): this is about a quarter of the real distance.) The action of the Romans may have resulted in the administrative separation of Notion from Kolophon—possibly following the same policy as that of the Athenians in the fifth century, to secure their position on the coast, while they left the inland region under Attalus—but it did not convert Notion into Kolophon. There is nothing in the letter of L. Scipio to the Senate and people of Kolophon (S.E.G. I. 440) to suggest that it was addressed to Notion: nor is there any evidence that the administrative separation lasted after the formation of the province of Asia.

The last occasion, before the establishment of the Roman Empire, on which Kolophon is mentioned by ancient historians is the Mithradatic War. The city fell into his hands with the rest of the province of Asia: following the example of Ephesos, it tried to break away from him, together with Smyrna and other neighbouring cities, in the reaction of 86-5,

but was reduced and apparently placed under the government of a 'tyrant,' Epigonus by name, who was expelled by Lucullus in 85 (Plutarch, Lucullus, 3).

Under the Empire, nothing is heard of Kolophon. It had then no military value, and the main lines of traffic passed at some distance from it. Presumably it still served as a market-town and centre for the rich agricultural district, from which it had formerly drawn its wealth, till the troubles which reduced the prosperity of all Asia Minor in the middle of the third century A. D.; but this can only be inferred from such indications as are given by such material evidence as coins.

The literary records quoted above do not give much information about the economic history of Kolophon, after the rather vague accounts of its early prosperity, and its ruin when the Lydian monarchs were supreme in Western Asia Minor: but something can be added from the archaeological evidence provided by coins and inscriptions from the beginning of the fifth century B. C. onwards. The issue of coins probably began soon after the Persians had conquered the Lydians, at first mainly in the form of small change for the convenience of the local markets: the Persian kings struck nothing smaller than the silver siglos, which passed as the equivalent of the Greek drachma, and this carried much too high a value to be useful in daily shopping. So there was a fairly large output of "halves" and "fourths," which were plainly marked on their faces with their

denominations, as they had to serve a mixed Persian and Greek centre of trade. But, by the beginning of the fifth century the Greek merchants of Kolophon were able to stand on their own feet in regard to currency, and they struck considerable numbers of drachmas of approximately the same weight as the sigloi, besides smaller silver: the technical excellence of this coinage suggests that the city had attained once more to prosperity.

The establishment of the Athenian Empire in the Aegean was not an advantage to Kolophon: it was too far from the sea for the Athenian fleet to guarantee its communications with the west, and the Kaystrian plain, from which its wealth was derived, was still more open to Persian interference. So it was natural that there should be a strong pro-Persian party there, especially among the landowners, and the currency became less Greek in form: the smaller denominations ceased to be issued, as there would be few visiting traders in the markets who wanted to settle small accounts exactly in cash, and the only coins struck were drachmas, for the wealthier inhabitants: at the same time the art of the die-engravers fell away from its former high standard to a more provincial type. This decline was increasingly manifest in the second half of the fifth century, and is paralleled by the reduction of the assessments of the city in the Athenian tribute-lists.

The fourth century saw a revival again: this is very evident in the coinage, which not only improved in artistic merit, but was expanded by the resumption

of the issue of small silver and the inception of a bronze currency. The standard on which the silver was struck was changed from the Persian to the Asiatic Greek, which indicates a renewal of oversea trade with the Aegaeon area. As already noted, the excavations of 1921-2 show that there was much building activity in the city, and the building inscription of 307 or 306 B. C. is worth some analysis in this connection. Only about half of it is preserved, but fortunately the opening section is sufficiently complete to give the chief details: the citizens had agreed to build a wall, and appointed a body of ten to raise contributions from outside, while each citizen should subscribe as he wished. As a result, the remains of the list of subscribers show about four hundred names, so that the original total may have been nearly eight hundred: they are arranged under headings of the sums given, and the later headings are lost, but it would appear probable that there were about a hundred and fifty who contributed three hundred drachmas and upwards, some of the contributions being from families: the ten commissioners gave ten thousand drachmas, one providing three hundred and seventy only and the rest making up the balance between them. These figures indicate the existence of a fairly wealthy body of citizens. The amounts received from outsiders are also interesting, as they would almost certainly be from men who had business connections with Kolophon: there are two Macedonians and one representative each from Abdera, Amphipolis, Maroneia, Pitane,

Herakleia, Miletos, and Naukratis, all, except the last, among the large subscribers at the head of the list: the largest is one of the Macedonians, who gave fifteen hundred gold pieces (i.e. staters worth twenty silver drachmas): the other Macedonian gave a thousand drachmas, the six next named sums in gold from six hundred down to one hundred staters. The predominance of men from the north of the Aegean is worth noting, in view of the early connexion of Kolophon with Thrace: this accords with the evidence given by the change of standard in the coinage as to the renewal of oversea trade in this century.

This period of prosperity was ended by Lysimachus, when he removed a part of the inhabitants of Kolophon to Ephesos: the coinage dwindled away, and apparently ceased altogether in the second century. If, as suggested above, the importance of Kolophon in the latter part of the third century was largely military, the stoppage of local coinage is understandable, since the kings who garrisoned it would pay their troops in their own currency, which would pass into the city shops: in the second century, after the battle of Magnesia, the great output of Smyrna could supply the circulation. There was a fresh issue of bronze in the first century, probably while the city was in the hands of the supporters of Mithradates: but this does not seem to have lasted long.

No literary evidence exists concerning the economic position of Kolophon under the Roman Emperors, and for the first century A. D. the coins give no help:

in fact, there are hardly any known. A sudden outburst comes in the reign of Trajan, for which no reason can be suggested: there is nothing of Hadrian, and very little of Antoninus Pius and Commodus. But with Caracalla an activity commences, which continued for half a century, and may indicate a revival in the commercial importance of the city. If this is correct, the revival was possibly due to the northward shift of the trade routes from the interior, as the harbour of Ephesos got silted up, as had also that of Miletos: Smyrna was monopolising the shipments to the west, and the caravans that had gone down the valley to Ephesos would turn northwards to Smyrna through Kolophon and bring back business to its inhabitants.

Throughout the five centuries in which Kolophon issued an autonomous coinage, the types were predominantly Apolline: no silver was struck with any obverse type other than the head of Apollo, except at the beginning of Period II, when there were concurrent issues with heads of Apollo and of Artemis: and the same rule was observed in regard to the bronze till the closing years of the series. For reverse types, after Period I, when marks of value were used, the silver had only the lyre and the tripod of Apollo, and, on the latest issue of all, the spread tetradrachms of the second century B. C., a full-length figure of Apollo: the bronze began with the lyre, but soon non-Apolline types were admitted on the reverse, though the lyre and the tripod persisted,

and the full-length figure was also used in the last period. Under the Empire, Apollo was still the most favoured reverse-type: a seated figure of him occurs in almost every reign when coins were struck at Kolophon from Augustus to Gallienus, with little variation in the pose: he normally holds a laurel-branch and rests his elbow on a lyre, and occasionally a tripod is added: the only notable exception is under Trajan, when he holds a small image of Artemis. On coins of Commodus, Caracalla, Maximinus, and Gordianus, his seated figure is grouped with two standing goddesses, one of whom is clearly Artemis: the other is more difficult to identify, but may be his mother Leto as suggested by Picard (*Ephèse et Claros*, p. 391): she is certainly not Nemesis, as has been supposed, since her right hand is lowered, not raised to her neck, and in her left she holds a sceptre. The only standing figure of Apollo in this period is on a coin of Domitia. None of the types can be associated with any known sculptured figure: the reason for the choice of Apollo was the existence on what was usually Kolophonian territory of the great temple of Apollo Klarios, near Notion; and on coins of Gallus and Valerian there is a summary representation of this temple, with representatives of the thirteen Ionian cities standing before it, and in it a seated figure in the same pose as the common reverse type: so this seated figure may be meant to show the temple-statue of the Imperial period: on the coins of Trajan it is given the title of Klarios. The earlier figures on the autonomous coinage are,

however, standing ones: there is no instance of a seated type. As for the heads of Apollo on the obverses, there is no consistent tradition: the archaic head of the first silver has nothing in common with the fine severe type which succeeds it, and in the fourth century B. C. two entirely different conceptions were used concurrently for the same magistrates: so it is clear that (as commonly occurs in Greek numismatic art) each artist could design a head according to his own ideals.

While Apollo is always represented on the Kolophonian coins in purely Greek style, Artemis is not: in fact, her position in the Kolophonian theology is somewhat obscure. The female head on the obverse of some of the drachmas of Period II is surely Artemis, though at first sight it would rather suggest Aphrodite: there is, however, no trace of Aphrodite-worship at Kolophon: she is not named among the ancestral deities in the building inscription of 307-6—where there is equally no mention of Artemis—and in the long catalogue of contributors given by that inscription there is not one name derived from Aphrodite, while there are twenty men named Artemidoros and four named Artemon. This early head of Period II is of the best Greek art: and the only other appearance of Artemis on the autonomous coinage, in the last period, shows her bust according to the usual Greek design, with bow and quiver at her shoulder. In the Imperial period, however, there is a reverse-type of an Asiatic cult-statue, resembling the well-known one of Ephesos, which on

the coins of Trajan is labelled alternatively Artemis Kolophonia or Artemis Klaria: the same figure, in miniature, is that held by Apollo in a reverse-type of the same reign already mentioned. This Asiatic type was the most popular under Trajan, but afterwards is found only on coins of Otacilia Severa and of Volusian. The Greek form recurs in the group of Apollo, Artemis, and another goddess, of Commodus and three later reigns. Whether the Artemis Klaria worshipped at the sanctuary of Klaros was represented there (if at all) in Greek or Asiatic form cannot be decided, though the probability is in favour of an Asiatic statue: at Kolophon itself, in the autonomous period, she was evidently regarded as Greek, like her brother.

Athene Polias was one of the ancestral deities named in the building-inscription of 307-6 B. C., but it was not till five hundred years later that she appeared as a coin-type, on a reverse of Julia Domna: a similar type was used for Volusian and Gallienus.

Asklepios occurs on the coinage of Kolophon only once, associated with Hygieia and Telesphoros on a reverse of Caracalla. It is not obvious in what connection he was introduced, but, as the same magistrate, Tiberius Claudius Myron, who was responsible for this coin, also had the coin of Domna with the new type of Athene struck, he may have been casting round for novelties without particular regard for their local setting.

It is possible that the same man may have been the sponsor of Sarapis as a Kolophonian coin-type,

since this first occurs in the same reign: it is, however, used on the smaller coins only, which have no magistrates' names, so the exact authority for it cannot be fixed. Sarapis had been growing in popularity as a coin-type in the cities of the Asiatic coast from the middle of the second century A. D., and might therefore be borrowed: after his introduction he recurred several times, down to the end of the coinage under Gallienus, and practically became one of the stock types for bronze of the third size.

Another introduction of the same reign was Tyche, the only figure of this class of personifications who appears on the coins of Kolophon; and she was probably regarded as the City goddess rather than as a mere personification of Fortune. She was such a common type that the only remarkable thing is that she had not occurred sooner: like Sarapis, she became a stock type for the third size of bronze, with one occurrence on the second size under Maximinus.

Another popular personification, of a different class, was the reclining figure of a river-god: but this is found only once at Kolophon, in the reign of Macrinus, on the smallest size of bronze. There was no important river at Kolophon: one stream, the Hales, flowed under the wall and southwards to Notion, another ran from inside the city northwards, but it is uncertain which, if either, of these was intended to be commemorated: the identification of this type on coins of Asiatic mints with any particular river is problematical, unless the name appears in the legend, and two rivers—for instance, at Ephesos

the Kaystros and the Kenchreios—may be represented by identical types at one place. The comparative insignificance of the rivers at Kolophon may be the reason why the type was not used there more.

Though Kolophon was one of the cities which claimed to be the birthplace of Homer, it was not till late in the first century B. C. that his figure was introduced as a coin-type: it had appeared at Smyrna over a century earlier. Then, after a long interval, it was revived by the Kolophonian artists in their search for new types which began in the time of Caracalla: in order that there might be no doubt as to the poet who was represented, his name was inscribed on the scroll he held, in the first instance. This type was then appropriated to bronze of the second size.

For the same size another type was borrowed in a naked male figure, doubtless a boxer, which occurs in the reigns of Philip and Decius: it was one of the agonistic types which became common in Asia Minor in the third century, when the professional athlete was at the height of his glory. There is no record of any special games or school of training at Kolophon which might account for the adoption of this type.

The representation of a sacrifice by representatives of the thirteen cities of the Ionian Koinon before the temple of Apollo Klarios, which is found on the coins of Gallus and Valerian, was also borrowed. The earliest coins of the Koinon, which originally met on Mykale at the Πανιώνιον, were struck under An-

toninus Pius, and had no name of a city as the place of issue: later, Ephesos developed the idea of gathering the thirteen representatives before its temple, and Kolophon followed suit. This may perhaps indicate that the meetings of the Koinon were then held at different temples in turn.

All the types described so far have a religious or commemorative import: on the autonomous bronze there are some reverses of a different class, which refer to the fame of Kolophon as a home of horses and horsemen: the earliest is the forepart of a prancing horse, soon followed by a horseman charging with spear couched, and by a walking horse: towards the end of the autonomous coinage the horseman is transferred to the obverse of one set of issues, and Apollo relegated to the reverse. Under the horse, on the last-named coins, is an animal, probably a wolf: the reason for this addition is suggested later. There is no reference to horse breeding in the types of the Imperial period.

The only animal-type found under the Empire is the ram, the earliest instance of which is on coins of Antoninus Pius, of the smallest size. It continued to be the stock type for this denomination till the end of the mintage at Kolophon. The reason for the choice of the ram is not obvious: animal types were commonly used for small coins in this period, as they were artistically convenient, but the ram is not known to have had any connection with Kolophon or its deities.

The use of the caps of the Dioskouroi as a reverse-

type on small bronze coins of the last autonomous period is also not explained, as there is no record of a Kolophonian cult of the Dioskouroi: they might of course be popular with the Kolophonian horsemen.

The artistic interest of the Kolophonian coinage, at any rate in the autonomous series, mainly lies in the apparent connection between the political fortunes of the city and the merits of the engravers employed to produce the dies used. There is no consistent tradition of style: it might have been expected that, when the head of Apollo was almost the only obverse type used from the beginning of the fifth till the end of the second century B. C., there would have been a standard conception of the treatment, even if it developed in sympathy with the general advance of Greek art. Instead of this, not only do fresh schemes appear from time to time, but two different ideals are found in vogue at the same time: the impression produced by a survey of the whole series might be described as a succession of artistic spasms.

There is no record of any local school of artists, in any branch of production, at Kolophon: it claimed some literary reputation in early times, not only as the birthplace of Homer, but as the home of Mimnermus and Xenophanes; but it had no parallel names in the artistic world. This may be explained, perhaps, as due to the economic status of the city: in the periods of its prosperity, it was the centre of a rich agricultural district, and the ruling class in the state may probably be conceived as a body of country

squires, hard riders rather than hard thinkers: some of them might be patrons of art, but they would have to send abroad if they wanted to obtain objects of art: the lower classes would be grooms or husband-men, or, if in any sense technicians, only concerned with the requirements of the staple industry. In such a community, it would be necessary to import die-engravers whenever there was a need for a supply of coins: as there were evidently gaps of some length when no coins were issued, the engravers might not find it worth while to stay on at Kolophon after they had provided the requisite dies; and next time that the need arose, engravers might be obtained from a different school.

Of the art of the sixth century coinage little can be said, as it consists almost entirely of tiny pieces, roughly struck, which can hardly be classified by schools: they are definitely archaic, and crude. There is a marked contrast in the first issues of the second period, which began with really fine, though severe, heads of Artemis and Apollo: there is nothing comparable to them in the contemporary coins of other cities in Ionia, and the technique suggests that of gem-engravers, who may have been imported for the occasion from Samos. These first dies are at an artistic level which none of the following ones reached: the general conception was copied, more weakly, in another, and a rather different and drier rendering appears in a second, which preserves more of the technique, but has lost the charm. After that comes a steady degradation: the head of Artemis

ceases to appear as a type, and that of Apollo is much less skilfully handled; three styles can be distinguished, no one attributable to any particular school, and in each the workmanship of different dies varies in merit, but is never more than fair. The deterioration in the art of the coins may reflect a decline in the prosperity of Kolophon: at the beginning of the century it was in all probability flourishing; but the domination of the Ionian coast by the Athenian fleet would be detrimental to a place with considerable interests in Persian trade, and the alternations between Greek and Persian control in the second half of the century, which would almost certainly mean the transfer of the government of the city from one party to another—oligarchs and democrats securing the upper hand in turn—would be particularly disastrous in an agricultural community like Kolophon.

About the beginning of the fourth century there was a change in the standard to which the silver coinage was struck; and this was accompanied by changes in the technique of striking, a new form of reverse die being used, and in the artistic style of the devices engraved on the dies. The latter is the more noticeable, as there appear in the heads of Apollo on the obverse dies two distinct ideals, which have as little relation to one another as to any of the work of the preceding period. For a while the two continued side by side, dies of both schools being used for the same magistrates: then, one tradition, the less severe, was followed in the silver coinage, while the bronze,

which started about this time, after a brief experimental period when dies seem sometimes to have been borrowed from the silver, settled down to the other tradition.

In the plentiful bronze coinage of the later years of the fourth century a fairly high level of execution is maintained: different hands can be discerned in the dies, but, as there is no basis for arranging the individual issues in a chronological series, it cannot be decided whether two or more artists were working at the same time: there is, however, no instance of coins with the same magistrate's name being struck from dies of different styles. The great majority of the coins belong to one or other of two denominations, and these two show distinct treatment: as the same names of magistrates are hardly ever found on both denominations, it may be that the denominations were struck at different shops, which employed different groups of artists, and were patronised by different magistrates: on the other hand, as the larger denomination began to be issued later than the other, and there was frequently a tendency in Greek coinages to adhere closely to the design set at the beginning of a series, the fact that the head on the larger coins is rather more advanced in treatment than that on the smaller may be explained by the change in artistic taste between the times when the two series were started. The close similarity between some of the heads of Apollo on the smaller coins and those on coins of Miletos of the same size and about the same

date suggests that the same artist may have been the designer of both sets.

In the third century there is a rapid collapse in the art of the Kolophonian coinage: after the first quarter of the century there seems to have been little currency struck, and that was carelessly executed. A solitary issue of silver tetradrachms, early in the second century, has an exotic look, and there is no bronze which can certainly be ascribed to this century. When new series of bronze were started in the first century, both design and execution were poor, and the latest autonomous coins are miserable productions in every respect.

There is little to be said of the art of the Imperial period: the one coin known of Augustus is crude, the two of Domitian and Domitia not much better. The first considerable issue, under Trajan, shows a more practised hand, but little taste: some similarities to the coins of Smyrna of the same reign may indicate that men were brought from Smyrna to revive the mint at Kolophon, or that the authorities of Kolophon ordered a set of coins from the mint at Smyrna. The workmanship of the larger dies of the reigns of Antonius Pius and Commodus is more competent, but the issues were small: when they became more regular and extensive, from the time of Caracalla onwards, there was a dead level of mediocrity throughout, with no noticeable degeneration, but equally no improvement. Comparison with the issues of neighbouring cities shows no links, so it

may be concluded that for the last half century of the coinage a local mint existed at Kolophon.

The dualism, if it may be so called, in the art of the Kolophonian coinage of the fifth and fourth centuries B. C. appears in another connexion as affecting the control of the issue. At the beginning of the issue of drachmas there is the unusual phenomenon of the use of the heads of two deities—Apollo and Artemis—as obverse types for the same denomination. As a rule, a Greek city which adopted for its coins obverse types of this class, instead of the city badge, either adhered to one deity for all denominations, or allotted different ones to different denominations: the most notable exception is in the coinage of the Eleians, where there are parallel series with heads of Zeus and of Hera. But the conditions of this case were peculiar: the two series were issued from two distinct shops, which show no links in dies or art, and might possibly be regarded as rivals, produced by the two chief temples of Olympia in competition for the custom of visitors to the Olympic games. At Kolophon the coins with the heads of Apollo and of Artemis must have come from the same shop, as the same reverse die is found associated with both obverses: and it is difficult to suggest an explanation for this, unless one can be derived from the coinage of the next century. In this, magistrates' names appear on the coins: and there was, in several cases, a joint user, not of reverse, but of obverse dies for as many as three magistrates: for instance, in one group

one die was used in common by Hermonax, Zenodotos, and Platon, another by Hermonax, Platon, and Pythodoros: in another group Aristides, Zenes, and Nikias had two dies, both of which were used for all three. It is of course not uncommon in Greek cities to find an obverse die passed from one man to another, and possibly to a third, but in most cases it can be proved by the wear of the die that the different users were successive: at Kolophon the specimens examined, which in regard to the second group named are fairly numerous, do not show any indications of priority in use as between the three; and it would seem most probable that they were all having coins struck for them at the same time, and that an obverse die could be used indifferently with the reverse of any one of them as wanted.

A somewhat similar common use of obverse dies for three magistrates occurs at Smyrna in the second century B. C.: and I suggest (Num. Chron. Ser. 5. vii. 1) that there was possibly a board of three in control of the mint, each of whom could have coins struck in his own name: if there was a demand for a large supply of coins of one denomination, and all three were called on to meet this demand together, it would be quite likely that one obverse die would serve the turn of all three, and be followed by others similarly used. This explanation seems to suit the situation at Smyrna, where, after 190 B. C., there was such an extensive issue of bronze that some sort of mint might well have been kept in being: but at Kolophon there must have been many years, even

in the period under discussion when the issues were largest, in which no coins were struck, and it would have been a work of supererogation to nominate a board to do nothing. Moreover, such a board of magistrates nominated for a particular service seems, in a Greek city, to imply a democratic constitution: and, though nothing is known of the constitution of Kolophon in the fourth century, it is highly probable, in view of the strong Persian influence there, that it was an oligarchy or a timocracy, as Aristotle describes it to have been at an earlier date. In this event, the action which would probably be taken by the governing body, when currency was wanted, would be to request some of its wealthier members to see to its provision: the inscription of 307 already quoted shows that, when funds were required for building the walls, a committee of ten was appointed to collect subscriptions and to head the list with substantial sums: the principle was that of the liturgy, familiar in most Greek cities. The chosen supervisors of the coinage would finance the issue from their own resources, and would presumably give their orders for the preparation of dies and the striking of coins to silversmiths; and this would explain the concurrent use of dies executed by different artists: one man might order an obverse die from one engraver, another from a second; but both could be employed in case of need for all the partners. It must be remembered that the minting arrangements of nearly all Greek cities, except Athens, seem to have been very casual: even at Alexandria in 258

B. C., when Apollonius, the finance minister of Ptolemy Philadelphus, directed his subordinate Demetrius to strike some gold coins, the latter pleaded that he was able only to restrike old coins of good weight, and would have to be provided with expert assistance if he was expected to assay the metal (P. Zeno Cairo 59021). If such conditions are found at Alexandria, with its highly organised civil service and its gathering of masters in all branches of knowledge, it is hardly likely that a smaller city would have more elaborate minting arrangements.

The probability, then, is that the issues of coin in the fourth century at Kolophon were made on the personal responsibility of the individuals nominated—for convenience they may be called magistrates, but they may have been only *ad hoc* magistrates. This would explain why the earliest issue of bronze bore no names of magistrates: it was possibly experimental, and was evidently not struck to an exact standard, so it did not require a personal guarantee, as the contemporary silver did: it was purely a token-coinage.

Under the Roman Empire, in view of what has been said in connection with the art of the coins, it may be doubted whether a mint existed at Kolophon before the reign of Caracalla: the coins that occasionally appeared may have been ordered from mints in other cities. After that, there may have been a local mint, but the output, though a good many reverse types were used, was probably small, as one obverse die not infrequently served for several

reverses, and a reverse die was occasionally used with obverses of two members of the Imperial house: also few varieties are represented by more than two or three examples. There is only one instance of a 'pseudo-autonomous' coin, the nearest approach possible under Roman rule to a civic issue: and the general impression given by the coins of this period is that they were mainly epideictic in character.

In the descriptions which follow, the coins have been grouped mainly by style: the order of the groups is intended to be chronological, except that the silver and the bronze of each period are treated independently. There is not sufficient material for attempting a chronological arrangement of the issues in the groups.

The chief public collections from which examples are described have been indicated by their initials: these are:—A = Athens; B = Berlin; C = Cambridge; G = Glasgow; K = Kopenhagen; L = London; Len = Leningrad; M = Munich; NY = New York; O = Oxford; P = Paris; V = Vienna; other collections have their names given in full. Details are added, so far as I have been able to obtain them, of size, weight, and die-position: the last is important only in Period II, when the dies were evidently loose; later, they seem to have been almost always adjusted. Sale-catalogues are quoted when the specimens concerned were illustrated.

Abbreviations used in the description of types and listing of varieties are in most cases self-explanatory.

Those most commonly used are as follows: ab., (above); bel., (below); BMC, (British Museum Catalogue); Ch. Ch., (Christ Church); cmk., (counter-mark); comm., (commerce); ethn., (ethnic); ex., (exergue); i.l.f., (in left field); i.f., (in field); ins., (inside); l., (left); laur., (laureate); leg., (legend); Mi., (Mionnet); Mi. S., (Mionnet, Supplement); N.C., (Numismatic Chronicle); obv., (obverse); prob., (probably); r., (right); rev., (reverse); Wadd., (Waddington).

In the listing of specimens for each variety, the pieces illustrated on the plates have their enumerating letter in italics, as: (*b*) L. (BMC. 205/3), etc., under No. 3; letters enumerating specimens not illustrated herein appear in Roman type, as: (a) L. (BMC. 205/2; Imhoof, l.c. vii. 2), etc., under No. 3.

PERIOD I

(c. 525 – c. 490 B. C.)

GROUP A—SILVER

STATERS. *Obv.* Head of Apollo to front, with long lock of hair on each side.

Rev. Irregular incuse, divided into two squares and three triangles, two of which are raised.

HALF-OBOLS. *Obv.* Similar head of Apollo, laur.

Rev. Mark of value in square incuse.

QUARTER-OBOLS. *Obv.* Similar to half-obols.

Rev. Mark of value in square incuse.

1. Stater.

(a) B. (Regling, Münze als Kunstw. pl. iii. 80)

(b) L. (N. C. 1899, 279, pl. xvi. 6) 5.62 g. (c) P. (Babelon, *Traité* ii. 1822) 5.55 g.

[(a) and (b) probably from same dies.]

2. Half-obol: on rev. **Μ**

(a) L. (BMC. Pelop. 205/1: Imhoof, N. C. 1895, 279, vii. 3) 8 mm., 0.54 g.

3. Half-obol: on rev. **††**

(a) L. (BMC. 205/2: Imhoof, l.c. vii. 2) 8 mm., 0.52 g. (b) L. (BMC. 205/3) 8 mm., 0.40 g. (c) Bompois cat. 1422. (Imhoof, l.c.) 8 mm., 0.49 g. (d) f. E. P. Warren. (Regling cat. 171/1101) 8 mm., 0.45 g. (e) f. H. Weber. (Forrer cat. 5807) 8 mm., 0.44 g. (f) Cahn sale lxxi, 709 e. (pl. 19) 0.51 g.

[(a) (c) (e) and (f) appear to be from the same obverse die.]

4. Half-obol: on rev. **††**

(a) B. (Imhoof, l.c. vii. 1) 8 mm., 0.44 g. (b) f. Six. (Imhoof, l.c.) 8 mm., 0.65 g.

5. Half-obol: on obv., laurel-leaf at each side; rev. as 4.

(a) B. (Imhoof, l.c. vii. 5) 8 mm., 0.48 g. (b) B. 8 mm., 0.45 g. (c) P. (Babelon, *Tr.* ii. 1900) 8 mm., 0.40 g.

6. Half-obol: as 3, with K O and laurel-leaf at each side in field of obv.

(a) B. (Imhoof, l.c. vii. 4) 8 mm., 0.43 g. (b) Borrell sale 148. (Imhoof, l.c.) 8 mm., 0.42 g.

7. Quarter-obol: on rev. **Ε**

(a) B. (Imhoof, l.c. vii. 6) 7 mm., 0.29 g. (b) B. (Imhoof, l.c.) 7 mm., 0.19 g. (c) B. 7 mm., 0.23 g. (d) O. 7 mm., 0.28 g. (e) P. (Babelon, *Tr.* ii. 1903)

7 mm., 0.27 g. (f) V. (33439) 0.21 g. (g) E. T. Newell. 7 mm., 0.37 g. (h) E. T. Newell. 6 mm., 0.29 g. (i) f. H. Weber. (Forrer cat. 5808) 6 mm., 0.23 g. (k) Egger sale xlvi, 1827. 7 mm., 0.20 g. (l) Cahn sale lxxi, 709 f. (pl. 19) 0.22 g. (m) Cahn sale lxxi, 709 g. 0.23 g.

GROUP B—SILVER

QUARTER-OBOLS. *Obv.* Head of Apollo to front, sometimes laur., hair short.

Rev. Mark of value in square incuse.

8. Quarter-obol: head not laur.: on rev. $\overline{\text{E}}$
(a) f. Imhoof. (Imhoof, l.c. vii. 7) 6 mm., 0.29 g.
9. Quarter-obol: head laur.: on rev. $\overline{\text{E}}$
(a) B. (Imhoof, l.c. vii. 9) 6 mm., 0.23 g. (b) f. Gonzenbach. (Imhoof, l.c.) 6 mm., 0.23 g.
10. Quarter-obol: head laur.: on rev. $\overline{\text{F}}$
(a) L. (BMC. Pelop. 205/4: Imhoof, l.c. vii. 8) 6 mm., 0.23 g. (b) Cahn sale lxxi, 709 h. (pl. 19) 0.24 g.

GROUP C—SILVER

QUARTER-OBOLS. *Obv.* Head of Apollo three-quarters r., hair waved.

Rev. Square incuse, quartered.

11. Quarter-obol: in quarterings of rev. $\begin{matrix} \Lambda & O \\ O & K \end{matrix}$
(a) B. (Imhoof, l.c. vii. 9a) 6 mm., 0.18 g. (b) Cahn sale lxxi, 709 k. (pl. 19) 0.16 g.
12. Quarter-obol: in centre of rev., pellet.
(a) Cahn sale lxxi, 709 j. (pl. 19) 0.21 g.

Probably the earliest coins that have been attri-

buted to Kolophon are the two archaic staters discussed by Sir H. Weber in *Num. Chron.* 1899, p. 278: both have frontal heads as the obverse types, one a short-haired head, with a square incuse divided into six rectangular compartments, the first and last raised, on the reverse; the other a long-haired head, with an irregular incuse divided into two squares and three triangles, two of which are raised. Both heads were taken by Weber as of Apollo: he was, however, doubtful about the first, and his doubts seem justified, as the type looks much more like Pan than Apollo: in view of this, the ascription to Kolophon cannot be pressed. But the second is definitely Apolline, and the general style is near to that of the small pieces of fractional values which are certainly of Kolophon: the weight also is suitable to that city, being approximately that of the Persian siglos, which would be familiar at Kolophon after its liberation from Lydian control by the Persians. The technique is not Aeginetan or Aegaeon, if the latter term can be taken to include the 'island' coins: even less is it like that of Caria and Rhodes: there are, however, some affinities with the coins of Teos. So it seems justifiable to give this stater to Kolophon.

The fractional pieces mentioned were first identified as Kolophonian by Dr. Imhoof-Blumer in *Num. Chron.* 1895, p. 279: there are three groups, the first with a frontal head with long hair, like that of the stater; the second a similar head, but with short hair; the third a head inclined three-quarters right, with waved hair. The first two groups have their values

marked on the reverse, as halves or quarters, by the ligatures **HM** or **TE**: in the third this practice disappears, and one variety bears instead the first four letters of the name of the city.

It may be assumed that the half and the quarter respectively were meant to refer to the Greek reckoning in obols. The market at Kolophon would be a meeting-place for Anatolian and Greek merchants: the stater, by its size, would be readily accepted as representing either the Persian siglos or the Ionian drachma, and the twelfth of the stater—a fraction familiar on the Ionian coast, as appears from the evidence of the electrum coinage—would equally serve for the half-obol. The average weight of the halves is .47 grammes, and that of the quarters .23, which fit in well with a nominal drachma of 5.5 grammes.

It is difficult to date the small coins by style with certainty: the stater might be assigned to about 525 B. C., and on economic grounds, it would not be unreasonable to think that the need of small change to supplement the Persian sigloi would be realised at Kolophon at the same time. The three groups probably followed in the order given, and the third might well be a quarter of a century later than the first, which would bring it down to shortly before the date assumed below for the beginning of the next period.

PERIOD II

(c. 490 – c. 400 B. C.)

GROUP A—SILVER

DRACHMAS. A. *Obv.* Head of Artemis r., laur., hair in thick mass behind, turned up and over and tied: necklace: leaves of wreath (six) paired: legend round.

Rev. Lyre of seven strings in square incuse: rim flat.

DRACHMAS. B. *Obv.* Head of Apollo r., laur., hair short, in three bunches at back: leaves of wreath (four) paired: legend round.

Rev. As A.

QUARTER-DRACHMAS. A. *Obv.* and *rev.* as drachmas A, but leaves of wreath above band only.

QUARTER-DRACHMAS. B. *Obv.* as drachmas B (?).
Rev. Square incuse, quartered.

HALF-OBOLS. *Obv.* Head of Artemis r., laur., hair in queue turned up at end.

Rev. Square incuse, quartered: surface granulated.

QUARTER-OBOLS. *Obv.* and *rev.* as half-obols.

13. Drachma: A: leg. ζ ИΟΙΙΩΦ ΛΟ Χ

(a) B. 16 mm., 5.32 g. (b) K. (KP. 1240) →, 18 mm., 5.33 g. (c) P. (Babelon, Tr. ii. 1898) 16 mm., 5.35 g. (d) P. (Wadd. 1484) 15 mm., 5.17 g. (e) E. T. Newell. ↗, 16.5 mm., 5.49 g.

[(a) (b) (c) and (e) same obv. die: (a) same rev. die as 14(c); (b) (c) (e) same rev. die as 14(a) (b) (d).]

14. Drachma: B: leg. ΣΙΟΙΙΩΦΛΟΧ

(a) B. 17 mm., 5.10 g. (b) L. (BMC. 2) ↙, 16.5 mm., 5.46 g. (c) O. (= Pozzi sale 2408) ↗, 17 mm., 5.42 g. (d) Benson sale 683. 15.5 mm., 5.44 g.

[(a) (b) (c) and (d) same obv. die: (a) (b) (d) same rev. die as 13(b) (c) (e); (c) same rev. die as 13 (a).]

15. Drachma: B: obv., to r. laurel-leaf and berry, leg. ΩΚΟΛ[]ΝΙΟΝ

(a) K. (GP. 866) ↓, 17 mm., 5.22 g.

16. Quarter-drachma: A: leg., traces only.

(a) Philipson sale 2091. (pl. 24) 10 mm., 1.20 g. (b) Philipson sale 2092. 10 mm., 1.17 g.

17. Quarter-drachma: B: leg. ⚭ ΚΟΛ

(a) E. T. Newell. 10 mm., 1.36 g.

18. Half-obol: in centre of rev., pellet.

(a) B. (Imhoof, l.c. vii. 10) 8 mm., 0.39 g. (b) B. 8 mm., 0.26 g. (c) O. 7 mm., 0.34 g. (d) P. (Babelon, Tr. ii, 1904) 8 mm., 0.41 g. (e) Winterthur. (Imhoof, l.c.) 8 mm., 0.35 g. (f) E. T. Newell. 8 mm., 0.35 g. (g) f. Gonzenbach. (Imhoof, l.c.) 8 mm., 0.27 g. (h) Cahn sale lxxi, 709 l. 0.30 g.

[(a) and (b) same obv. die.]

19. Quarter-obol.

(a) Cahn sale lxxi, 709 m. (pl. 19) 0.15 g.

GROUP B—SILVER

DRACHMAS. A. *Obv.* Head of Artemis r. laur., long lock of hair looped up behind: necklace: leaves of wreath (five) above band only: legend on 1.

Rev. Lyre of seven strings in square incuse: rim flat.

DRACHMAS. B. *Obv.* Head of Apollo r. laur., hair short, bunched over nape and bound across: leaves of wreath (four) paired: legend round.

Rev. As A.

QUARTER-DRACHMAS. *Obv.* and *rev.* as drachmas A.

20. Drachma: A: leg. C KOΛ ΦΩNION

(a) B. 16 mm., 5.37 g. (b) O. (= Naville sale X, 683 = Naville sale iv, 845 = H. Weber 5806) ↗, 16.5 mm., 5.42 g. (c) P. (Babelon, Tr. ii. 1897) 15 mm., 5.42 g. (d) Naville sale xv, 943. 17 mm., 5.47 g. [(a) and (b) same obv. die: (c) and (d) same obv. die.]

21. Drachma: B: leg. C KOΛOΦΩNION

(a) K. (KP. 1466) →, 16 mm., 5.17 g. (b) L. (1895) ↑, 16 mm., 5.37 g. (c) Jameson. (2258) 16 mm., 5.45 g. [(a) and (b) same obv. die.]

22. Drachma: B: leg. Ω NΩINΩΦOΛOK

(a) L. (BMC. 1) ↑, 16 mm., 5.37 g. [The style of this coin raises some doubt of its genuineness.]

23. Quarter-drachma: leg. ⸮ KO

(a) K. (KP. 765) ↑, 10 mm., 1.26 g.

GROUP C—SILVER

DRACHMAS. A. *Obv.* Head of Artemis r., laur., hair in thick mass behind, turned up and tied in knob: leaves of wreath (usually six) paired.

Rev. Lyre of seven strings in square incuse:
legend round: rim flat.

DRACHMAS. *B. Obv.* Head of Apollo r., laur., hair
short in three bunches at back: leaves of wreath
(usually four) paired.

Rev. As A.

THIRD-OBOLS. *Obv.* Head of Apollo r., laur., hair
short.

Rev. Mark of value in square incuse.

QUARTER-OBOLS. *Obv.* and *rev.* as third-obols.

24. Drachma: A: on obv., A behind head: leg.

┌─┐ ↓ ΜΟΙ ΜΩ Φ ΛΟΧ

(a) M. (3) ↑, 16.5 mm. (b) P. (Bab., Tr. ii. 1899)

16 mm., 5.45 g. (c) E. T. Newell. ↑, 16 mm., 5.20 g.

[(b) and (c) same dies: reading of (a) not certain.]

25. Drachma: A: leg. ┌─┐ ΜΟ ΜΙ ΜΩΦΟ Λ Ο Χ

(a) B. 16 mm., 5.38 g.

26A. Drachma: A: leg. ┌─┐ Κ ΟΛΟ Φ Ω Ν ΙΟ Ν

(a) O. ↗, 18 mm., 5.45 g.

[(a) same rev. die as 28A (a) (b) (c).]

26B. Drachma: A: leg. ┌─┐ Κ ΟΛΟ Φ Ω Ν ΙΟ Ν

(a) M. (2) ←, 17 mm. (b) Jameson. (2257) 18.5
mm., 4.08 g.

[(a) prob. same rev. die as 28B (a) (b): (b) plated
and chisel-cut.]

27A. Drachma: A: leg. ┌─┐ ↓ ΚΟΛΟ Φ Ω ΝΙΟΝ

(a) L. (1924) ↘, 18 mm., 5.29 g. (b) f. E. P.

Warren. (Regling cat. 1102) 17 mm., 5.30 g.

[(a) and (b) same dies: same obv. as 27B (a).]

27B. Drachma: A: leg. └─┐ outwards ΚΟΛΟ Φ Ω
ΝΙΟΝ

(a) O. ↑, 16.5 mm., 5.35 g.

[(a) same obv. as 27A (a) (b).]

28A. Drachma: B: leg.  K O Λ O Φ Ω N IO N


(a) Boston. (Regling, Warren cat. 1103) 16 mm., 5.26 g. (b) K. (KP. 658) →, 16 mm., 5.50 g. (c) Len. ↑, 16 mm., 4.74 g.

[(a) (b) and (c) same dies: same rev. as 26a (a).]

28B. Drachma: B: leg.  K O Λ O Φ Ω N ION

(a) Len. ↗, 15.5 mm., 5.30 g. (b) Naville sale V, 2534. 15 mm., 5.46 g.

[(a) and (b) same dies: prob. same rev. as 26a (a).]

29. Drachma: B: on obv., astragalos below head:
leg. [?]  —] Ω N ION



(a) Philipsen sale 2089. (=Hirsch sale xxxii, 535) 16 mm., 5.51 g.

30. Third-obol: on rev.  

(a) P. (Imhoof, G.R.M. p. 70, 1) 7 mm., 0.28 g. (b) V. (34996) 0.28 g. (c) f. Imhoof. (Imhoof, l.c.) 7 mm., 0.28 g.

31. Quarter-obol: on rev.,  

(a) B. (Imhoof, N.C. 1895, 281, vii. 11) 7 mm., 0.25 g. (b) P. (Bab., Tr. ii. 1911) 6 mm., 0.25 g. (c) V. (34995) 0.28 g.

32. Quarter-obol: on obv., symbol (?) behind head:
on rev.,  

(a) B. (Imhoof, l.c. vii. 12) 7 mm., 0.27 g.

33. Quarter-obol: on rev.,  , with cicada upwards on 1.

(a) f. W. T. Ready. (Imhoof, l.c. vii. 14) 7 mm., 0.29 g.

34. Quarter-obol: on rev., E , with grain of corn upwards on 1.

(a) B. (Imhoof, l.c. vii. 13) 7 mm., 0.30 g. (b) B. (Imhoof, l.c.) 7 mm., 0.26 g. (c) B. (Imhoof, l.c.) 7 mm., 0.25 g.

[(a) and (c) same dies.]

35. Quarter-obol: on rev., E , with astragalos on 1.

(a) B. 8 mm., 0.32 g. (b) L. (Imhoof, l.c. vii. 15 = H. Weber 5809) 7 mm., 0.29 g. (c) f. Gonzenbach. (Imhoof, l.c.) 7 mm., 0.27 g. (d) E. T. Newell, 0.25 g.

[(a) (b) and (c) prob. same dies.]

36. Quarter-obol: on rev., E , with stork r. on 1.

(a) L. 7 mm. (b) f. Imhoof. (Imhoof, G.R.M. p. 70, 2) 6 mm., 0.20 g. (c) Cahn sale lxxi, 709 i. (pl. 19) 0.25 g.

37. Quarter-obol: on rev., E , with two pellets on 1.

(a) K. (KP. 1134) \downarrow , 7 mm., 0.28 g. (b) M. (4a) (c) V. (34994) 0.29 g.

GROUP D—SILVER

DRACHMAS. *Obv.* Head of Apollo r., laur., hair short and curly.

Rev. Lyre of (usually) five strings in square incuse: rim flat: legend.

OBOLS. *Obv.* Head of Apollo l., laur., hair short and rolled.

Rev. Lyre in square incuse: legend.

38. Drachma: on obv., behind head A; leaves of wreath hardly visible: on rev., lyre of six strings:

leg. ↑↓ ΚΟΛΟ Φ Ω ΝΙΟΝ

(a) P. (Bab., Tr. ii. 1907) 16 mm., 5.20 g. (b) Basel sale viii, 356. 5.12 g.

[(a) and (b) prob. same dies.]

39. Drachma: on obv., wreath of four pairs of leaves, band across hair at back on nape: leg.

↑↓ ΚΟΛΟ Φ Ω ΝΙΟΝ

(a) B. 16 mm., 5.41 g. (b) B. 15.5 mm., 5.61 g. (c) C. (Leake) 17 mm., 5.52 g. (d) C. (McClellan 8047) ↑, 16 mm., 5.35 g. (e) L. (1922) ↑, 16 mm., 5.07 g. (f) New York. (Ward cat. 666) 17.5 mm., 5.48 g.

[(a) (b) (c) (d) and (e) same obv. and rev.]

40A. Drachma: leg. |—↓ ΚΟΛΟΦ Ω ΙΙ Ο Ι

(a) C. (McClellan 8046) ↓, 16.5 mm., 5.54 g. (b) Naville sale i, 2410 (= E. F. Weber sale 2765) 18 mm., 5.30 g.

[(a) and (b) same obv. and prob. same rev.: same obv. as 40B (a) and 40C (a) (b) (c).]

40B. Drachma: leg. |—↓ ΚΟΛΟΦ Ω ΙΙ ΟΝ

(a) Gotha. 17.5 mm., 5.38 g.

[Same obv. as 40A (a) (b) and 40C (a) (b) (c).]

40C. Drachma: leg. |—↓ ΚΟΛΟ ΦΩ ΝΙΟΝ

(a) B. 17 mm., 5.33 g. (b) Gotha. 17.5 mm., 5.47 g. (c) R. Jameson. (2260) 17 mm., 5.40 g.

[(a) (b) and (c) same dies: same obv. as 40A (a) (b) and 40B (a).]

41. Obol: leg. l. ↓ ΚΟΛΟΦΩ ↑ [?]

(a) B. 10 mm., 1.13 g.

GROUP E—SILVER

DRACHMAS. *Obv.* Head of Apollo r., laur., hair short and curly: wreath of four pairs of leaves.

Rev. Lyre of seven strings in square incuse, rim flat: legend.

42. Drachma: on obv., laurel-twigg behind head: leg.

|—↓ KOΛO Φ Ω NION

(a) Philipsen sale 2090. 16 mm., 5.30 g.

43. Drachma: leg. |—↓ KOΛO Φ Ω N IΩN

(a) L. (BMC. 3) ↖, 16.5 mm., 5.40 g.

44. Drachma: leg. |—↓ KOΛO Φ Ω N ION

(a) C. (Leake) 16 mm., 5.40 g.

GROUP F—SILVER

DRACHMAS. *Obv.* Head of Apollo r., wearing taenia, hair short and curly.

Rev. As group E.

45. Drachma: leg. |—↓ KOΛO Φ Ω NION

(a) P. (de Luynes 2590) 16 mm., 5.50 g.

[(a) same obv. die as 47(a).]

46. Drachma: leg. |—↓ KOΛO Φ Ω NION

(a) B. ↓, 17 mm., 5.25 g. (b) L. (BMC. 4) →, 15.5 mm., 5.38 g. (c) M. (4) (= Mi. iii. 75/108) ←, 16 mm., 5.43 g. (d) Naville sale iv, 846. (= H. Weber 5810) 17 mm., 5.48 g. (e) Naville sale vii, 1444. (= Philipsen sale 2087 = Hirsch sale xxxi. 463) 18 mm., 5.15 g.

[(b) (c) (d) and (e) same dies: (a) same obv.]

47. Drachma: leg. |—↓ KOΛ Φ Ω N ION

(a) Naville sale i, 2409. 16 mm., 5.43 g.

[(a) same obv. die as 45(a).]

48. Drachma: leg. |—↓ KOV Φ Ω N ION

(a) V. (17076) ↓, 18 mm., 4.89 g.

GROUP G—SILVER

DRACHMAS. *Obv.* Head of Apollo r., laur., hair short: wreath of four pairs of leaves with berries.
Rev. As group E.

49A. Drachma: leg. |[—]↓ KOΛ Φ Ω N ION

(a) B. 17 mm., 5.50 g. (b) Len. ↓, 16 mm., 5.47 g.
 (c) R. Jameson. (2259 = H. Weber 5805) 17 mm., 5.38 g. (d) E. T. Newell. ↑, 16 mm., 5.24 g. (e) Philipsen sale 2088. (= Hirsch sale xxxii, 534) 16 mm., 5.26 g.

[(a) (b) (c) (d) and (e) same dies: same obv. as 49B (a).]

49B. Drachma: leg. |[—]↓ KOV Φ Ω N ION

(a) O. ↑, 17 mm., 5.21 g.

[(a) Same obv. as 49A.]

The second period saw an important development of the coinage in the issue of larger silver coins in some quantity: these, like the single type of stater of the previous period, were approximately of the weight of the Persian siglos and were evidently intended to pass as the token either of that unit or of the Greek drachma. They may be termed drachmas, as it is probable that by the time when they appeared the Greek reckoning of values would be dominant at Kolophon. On grounds of style and technique they can be divided into seven groups: in the first two, comparatively few fractional pieces are associated with the drachmas, but the third includes a number of varieties, predominantly quarter-obols: after this, fractions of the obol apparently ceased to be issued: in the fourth group a single instance of an

obol occurs, the remaining three consist solely of drachmas. The denominations of the small pieces are sometimes unusual: the third-obol, which is marked with its value, is a fraction presumably due to Asiatic influence, and would be indistinguishable from the quarter-obol but for this mark of value, as the type and weight are practically the same: whether types 16, 17, and 23 are correctly described as quarter-drachmas is uncertain, in view of the general irregularity of the weights, but they seem to be too light for diobols and too heavy for obols.

The first group is of fine archaic style, with parallel series of drachmas bearing as their obverse types heads of Artemis and of Apollo: this unusual duplication of types is discussed above: quarter-drachmas exist of both series, but, so far as is known, half- and quarter-obols of the Artemis series only. It might be dated by style to just after 500 B. C.: as Kolophon is not recorded to have taken part in the Greek intrigues against Persia which culminated in the Ionian revolt, and normally was friendly with Persia, it is probable that the revolt was indirectly a cause of the issue of drachmas at Kolophon, since the supply of Greek currency from the neighbouring cities, particularly Miletos, would be interrupted for some time. The ethnic is on the obverse—a relic of the old uniface technique: the form used is regularly ΚΟΛΦΩΝΙΟΝ, in which the omission of the second O must not be taken as an engraver's blunder.

The second group shows a marked contrast in style to the first: it has the two series of drachmas,

with heads of Artemis and Apollo, and in both cases the treatment of the heads is much harder, especially in that of Artemis. The difference is probably due to the employment of another artist: this group need not on that account be regarded as later, since examples will be found subsequently of dies by two different artists being used simultaneously in striking coins at Kolophon: but, as the spelling of the ethnic in the form ΚΟΛΟΦΩΝΙΟΝ begins to come in, this may be taken as an indication of later date. In some respects the work of the artist of Group B seems to have affinity with the Syracusan style of 490–480: it is very definitely not Ionian. The ethnic is still placed on the obverse.

The style of Group C shows a return in some respects to that of Group A, though the execution is inferior: it suggests an attempt to reproduce the earlier designs by less skilled engravers, especially in the head of Apollo. The ethnic is now transferred from the obverse to the reverse, and is spelt in the longer form, with only one exception. The issue seems to have been more extensive than either of the previous ones: for each of these only three obverse dies for drachmas are known, one of Artemis and two of Apollo: in the third group there are five of Artemis and three of Apollo: the quarter-obols are also more numerous.

There is a definite artistic break between the third and the fourth groups: the archaistic traits of the former disappear, and the whole treatment of the head of Apollo in Group D is softer and transitional:

the Artemis series ceases with Group C. The technique is more careless, especially in regard to the striking of the coins.

Group E is very near to Group D in style, though by a different artist who had a rather freer hand, and the two may be practically contemporary.

Group F is again by a different artist, who belonged to a more severe school, and retained some archaic features in his head of Apollo, which is distinguished from the others by the substitution of a taenia for the laurel-wreath: the dies are better cut, and the striking more careful. A possible reminiscence of earlier traditions may be seen in the use of the shorter spelling of the ethnic in some of the reverses.

The last group of the period, G, seems to derive its model from F, but is distinctly inferior artistically: the whole effect is unpleasing, and suggests that the designer had no genuine Greek training: there may be a gap of some years between the two.

If these indications of the succession of the groups, given by the style of the coins, are considered with what is known of the history of Kolophon in the fifth century B. C., and the starting-point of the issue of drachmas is taken, as suggested above, at shortly after 500, an approximate chronology may be obtained. Group A may be connected with the re-organisation of the Ionian cities by Mardonius after the revolt, when it would be convenient to have a coinage of Greek denominations, but linked with the Persian standard, struck at a city which was under

strong Persian influence. About this time the coinage of Erythrai, another city with Persian connexions, changed over from the Asiatic Greek standard to one nearer the Persian, though not so near as that of Kolophon: the two coinages, taken together, may indicate an attempt to divert some of the trade which had formerly gone down the Maeander valley from the interior to Miletos into a new route, across the Kaystrian valley by Kolophon to the gulf of Smyrna and Erythrai: the fact that the standard at Erythrai was lighter than that at Kolophon may result from the greater distance of Erythrai from the Persian centre. The advantage of a local currency at Kolophon would continue until the growth of Athenian power on the coast made the use of definitely Greek standards more popular, which seems to have become general by 460: this may account for the break after Group C; and the dates for the first three groups may be tentatively put at 490 for A, 480 for B, and 470 for C, as fitting both the artistic and the economic evidence.

The extent to which Athens actually controlled the city of Kolophon during the period of the Athenian Empire is not clear: though the name of Kolophon appears on the tribute-lists, it was probably only in regard to overseas trade that any dependency was recognized. This, however, would be sufficient to operate against the issue of a drachma-coinage at Kolophon; and the gap between the third and fourth groups might well extend from about 460 to 430. After the latter date, Kolophon had cer-

tainly broken away: and the issue of coins may have been resumed with groups D, E, and F: D and E may have been concurrent, and F a little later. The style suggests a date of about 430 to 410: E is a comparatively small group, and with D may represent the output of 430 to 420, while F would cover the next decade. As already noted, there was probably a gap between F and G: the latter was a small issue, with only one obverse and two reverse dies known, and may have been struck about 400.

PERIOD III

(c. 389 – c. 350 B. C.)

GROUP A—SILVER

TETRADRACHMS. *Obv.* Head of Apollo l., laur., hair rolled at back: leaves of wreath paired.

Rev. Lyre in slight square incuse: legend round.

DRACHMAS. *Obv.* As tetradrachms.

Rev. Lyre: legend on l. and r.: sometimes slight incuse.

DIOBOLS. *Obv.* and *rev.* as drachmas.

50. Tetradrachm: leg. $\overline{\text{K}}$ \downarrow KOΛO Φ Ω NION:
lyre of seven strings.

(a) P. (Wadd. 1485) 26 mm., 12.93 g.

51. Drachma: leg. \uparrow KOΛOΦΩ \downarrow EPMΩNAE:
lyre of seven strings.

(a) O. (= Naville sale xv, 947) \uparrow , 18 mm., 3.58 g.

(b) P. (Bab., Tr. ii. 1917) 3.50 g. (c) V. (33900 =

E. F. Weber sale 2766) \uparrow , 16 mm., 3.44 g. (d)

Naville sale i, 2412. 17 mm., 3.48 g. (e) Cahn sale lxxviii, 1463. 17 mm., 3.54 g.

[(a) (d) and (e) same obverse die, and same as 53 (a) (f), 56 (b), and 66B (a): (b) and (c) same obverse die, and same as 56 (a) (d) and 58 (a): (a) and (d) same rev. die.]

52. Diobol: leg. ↑ ΚΟΛΟΦΩ ↓ ΕΡΜΩΝΑΕ:
lyre of five (?) strings.

(a) B. 10 mm., 0.89 g. (b) O. ↑, 11 mm., 0.90 g.

[(a) same obv. die as 54 (a), 55 (c) (d), 57 (a), and 60 (a) (c): (b) same obv. die as 55 (a) and 59 (a).]

53. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΙΗΝΟΔΟΤ:
lyre of five strings.

(a) B. 16 mm., 3.30 g. (b) Boston. (Regling, Warren cat. 1104) 17 mm., 3.57 g. (c) V. (38448)

↑, 17 mm., 3.13 g. (d) f. comm. (Imhoof, Gr. M. 264) 16 mm., 3.26 g. (e) Philipsen sale 2094. 15 mm., 3.18 g. (f) Cahn sale lxxvi, 314. 17 mm., 3.52 g.

[(a) and (f) same dies: same obv. die as 51 (a) (d) (e), 56 (a) (d), and 66B (a).]

54. Diobol: leg. ↑ ΚΟΛΟΦΩ ↓ ΙΗΝΟΔΟΤΟΣ:
lyre of seven (?) strings.

(a) K. ↑, 11 mm., 0.90 g.

[(a) same obv. die as 52 (a), 55 (c) (d), 57 (a), and 60 (a) (c).]

55. Diobol: leg. ↑ ΚΟΛΟΦΩ ↓ ΜΗΤΡΟΔΩΡΟΣ:
lyre of five strings.

(a) B. (? = Imhoof, Kl. M. 70/2) 10 mm., 0.86 g.

(b) New York. (Ward cat. 668) 11 mm., 0.93 g.

(c) O. (Boyne sale 413) ↑, 11 mm., 0.93 g. (d)

Naville sale i, 2416. 11 mm., 0.98 g.

[(a) same obv. die as 52 (b) and 59 (a): (c) and

(d) same dies, and same obv. as 52 (a), 54 (a), 57 (a), and 60 (a) (c).]

56. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΠΛΑΤΩΝ: lyre of seven strings.

(a) L. (BMC. 7) ↑, 16 mm., 3.31 g. (b) O. (Neville sale xv, 945) ↑, 16 mm., 3.59 g. (c) Philipsen sale 2094. 15 mm., 3.38 g. (d) Neville sale xv, 946. 17 mm., 3.57 g.

[(a) and (d) same obv. die, and same as 51 (b) (c) and 58 (a): (b) same obv. die as 51 (a) (d) (e), 53 (a) (f), and 66b (a).]

57. Diobol: leg. ↑ ΚΟΛΟΦΩ ↓ ΠΟΣΙΣ: lyre of six strings.

(a) K. (KP. 1051) ↑, 12 mm., 0.93 g.

[(a) same obv. die as 52 (a), 54 (a), 55 (c) (d), and 60 (a) (c).]

58. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΠΥΘΟΔΩΡΟΣ

(a) G. (Hunter cat. 2) 15 mm., 3.60 g.

[(a) same obv. die as 51 (b) (c) and 56 (a) (d).]

59. Diobol: leg. ↑ ΚΟΛΟΦΩ ↓ ΠΥΘΟΔΩΡΟΣ

(a) f. H. Weber. (5813: ?=Imhoof, Gr. M. 265) 10 mm., 0.98 g.

[(a) same obv. die as 52 (b) and 55 (a).]

60. Diobol: leg. ↑ ΚΟΛΟΦΩ ↓ ΘΛΑΕΦΑ: lyre of five (?) strings.

(a) L. (BMC. 11) ↑, 10 mm., 1.08 g. (b) M. (acc. 17885) ↑, 11 mm. (c) O. ↑, 10 mm., 1.03 g.

[(a) and (c) same dies: same obv. die as 52 (a), 54 (a), 55 (c) (d), and 57 (a).]

GROUP B—SILVER

DRACHMAS. *Obv.* and *rev.* as group A.

DIOBOLS. *Obv.* and *rev.* as group A.

61. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΑΙΓΥΠΤΟΣ:
lyre of seven strings.

(a) R. Jameson. (1261 = Egger sale xlv, 828) 16 mm., 3.50 g.

[(a) prob. same obv. die as 63 (a).]

62. Diobol: leg. ↑ ΚΟΛΟΦΩ ↓ ΑΙΓΥΠΤΟΣ

(a) L. (= H. Weber 5814) ↑, 10 mm., 1.05 g. (b) Philipsen sale 2095. 10 mm., 1.01 g. (c) E. F. Weber sale 2769. 10 mm., 1.05 g.

[(a) (b) and (c) prob. same dies, and same obv. as 64 (a).]

63. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΑΣΤΥ

(a) P. (Wadd. 1486) 15 mm., 3.35 g.

[(a) prob. same obv. die as 61 (a).]

64. Diobol: leg. ↑ ΚΟΛΟΦΩ ↓ ΑΣΤΥ

(a) P. (Wadd. 1487) 11 mm., 1.02 g.

[(a) prob. same obv. die as 62 (a) (b) (c).]

GROUP C—SILVER

DRACHMAS. *Obv. and rev. as group A.*

65. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΑΡΙΣΤΕΙΑΔΗΣ:
lyre of five strings.

(a) B. 17 mm., 3.43 g. (b) C. (Leake) 15 mm., 3.41 g. (c) G. (Hunter cat. 1) 16 mm., 3.61 g. (d) L. (1913) ↑, 15 mm., 3.40 g. (e) M. (6) ↑, 16.5 mm. (f) P. (2865) 3.47 g. (g) E. T. Newell. ↑, 16 mm., 3.58 g. (h) Philipsen sale 2093. (pl. xxiv) 15 mm., 3.37 g. (i) Naville sale xv, 944. 17 mm., 3.59 g. (k) Cahn sale lxvi, 313. 16 mm., 3.66 g.

[(a) (b) and (h) same obv. die and same as 66A (a) and (f) and 67 (a) (g) (i) (k): (c) (f) (g) and (k) same obv., and same as 66A (c) and 67 (b) (c) (d):

(a) and (b) same rev.: (f) (g) (h) and (k) same rev.]

66A. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΙΗΝΗΣ:
lyre of five strings.

(a) B. (Imhoof, M.G. 284/27) 16mm., 3.42 g. (b) L. (BMC. 5) ↑, 14 mm., 3.54 g. (c) New York. (Ward cat. 667) 16 mm. (d) Egger sale xlvi, 829. 17.5 mm., 3.59 g. (e) Naville sale i, 2411. 16 mm., 3.56 g. (f) Naville sale v, 2535. 15 mm., 3.29 g.

[(a) and (f) same obv. die, and same as 65 (a) (b) (h) and 67 (a) (g) (i) (k): (b) and (e) same obv.: (c) same obv. as 65 (c) (f) (g) (k) and 67 (b) (c) (d): (a) and (f) same rev.: (b) (c) and (a) same rev.]

66B. Drachma: leg. ↑ ΙΗΝΗΣ ↑ ΚΟΛΟΦΩ:
lyre of seven strings.

(a) E. T. Newell. ↑, 17 mm., 3.37 g.

[(a) same obv. die as 51 (a) (d) (e), 53 (a) (f), and 56 (b).]

67. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΝΙΚΙΑΣ: lyre of five or six strings.

(a) B. (Imhoof, M.G. 284/26) 16 mm., 3.47 g. (b) B. 16 mm., 3.32 g. (c) C. (McClellan 8048) ↑, 16.5 mm., 3.52 g. (d) L. (BMC. 6) ↑, 16 mm., 3.48 g. (e) K. (KP. 1112) ↑, 17 mm., 3.20 g. (f) M. (5) ↑, 16.5 mm. (g) P. (Wadd. 1488) 16 mm., 3.54 g. (h) V. (27462) ↑, 17 mm., 3.42 g. (i) f. H. Weber. (5811) 16 mm., 3.51 g. (k) Naville sale i, 2413. 17 mm., 3.46 g. (l) Cahn sale lxvi, 312. 3.52 g.

[(a) (g) (i) and (k) same obv., and same as 65 (a) (b) (h) and 66A (a) (f): (b) (c) and (d) same obv. and same as 65 (c) (f) (g) (k) and 66A (c): (b) (d) and (i) same rev.]

GROUP D—SILVER

DRACHMAS. *Obv.* Head of Apollo r., laur., hair rolled at back.

Rev. Lyre: legend on l. and r.

DIOBOLS. *Obv.* Head of Apollo l., laur., hair rolled at back.

Rev. Lyre: legend on l. and r.

68. Drachma: leg. ↑ ΑΚΑΣΤ[↑ ΚΟΛΟ

(a) B. 15 mm., 2.87 g.

69. Drachma: leg. ↑ ΓΛΑΥΚΟΣ ↑ ΚΟΛΟΦΩ

(a) f. Imhoof. (G.R.M. 70/3) 15 mm., 3.05 g.

70. Diobol: leg. ↑ ΓΛΑΥΚΟΣ ↓ ΚΟΛΟΦΩ: lyre of four strings.

(a) O. ↑, 10 mm., 0.89 g.

[(a) prob. same obv. die as 74 (a).]

71. Drachma: leg. ↑ ΔΙΟΔΩΡΟΣ ↑ ΜΥΤΑΔΟΣ

(bel.) → ΚΟΛΟ: lyre of five or six strings.

(a) K. (KP. 693) 15 mm., 2.98 g. (b) L. (BMC. 8)

↑, 15 mm., 2.98 g. (c) P. (Bab., Tr. ii. 1918) 15

mm., 2.72 g. (d) f. comm. (Imhoof, Gr. M. 264a)

16 mm., 2.95 g.

[(b) and (c) same obv. die.]

72. Diobol: leg. ↑ ΙΗΝΟΔΩΡ[[letters to r. off flan]

(a) B. 11 mm., 0.81 g.

73. Drachma: leg. ↑ ΠΛΑΤΩΝ ↑ ΚΟΛΟΦΩ:

lyre of five strings.

(a) V. (17077) ↑, 16 mm., 3.00 g.

74. Diobol: leg. ↑ ΠΛΑΤΩΝ ↓ ΚΟΛΟ

(a) B. (Imhoof, M.G. 284/32) 10 mm., 0.91 g.

[(a) prob. same obv. die as 70 (a).]

GROUP E—BRONZE

CHALKOI. *Obv.* Head of Apollo r., bound with taenia: hair in slightly waved locks.

Rev. Lyre in linear square: leg. usually outside square.

75. Chalkous: leg. → K O

Λ

(a) B. 12 mm. (b) L. (BMC. 14) ↑, 10 mm.

76. Chalkous: leg. r. ↓ KOΛ

(a) O. ↑, 11 mm., 1.49 g.

77. Chalkous: no leg., to r. and l. astragaloi.

(a) B. 12 mm.

78A. Chalkous: leg. (ab.) → K ↓ OΛ ← O ↑ ΦΩ: to r. and l., astragaloi.

(a) B. 14 mm. (b) B. 13 mm. (c) B. 13 mm.

(d) C. (McClean 8050) ↑, 12.5 mm., 1.81 g. (e)

K. (KP. 1261) ↗, 13 mm. (f) O. ↑, 12 mm., 1.81 g.

78B. Chalkous: as 78A, but K inside square.

(a) B. 13 mm. (b) E. T. Newell. ↑, 12.5 mm., 1.99 g.

79. Chalkous: on obv., line border: leg. as 78A.

(a) B. (Imhoof, M.G. 284/33) 11 mm., 1.35 g. (b)

f. H. Weber. (5815) 11 mm., 1.49 g.

80. Chalkous: leg. on r. [?]: to l., grain of corn.

(a) B. 12 mm.

81. Chalkous: leg. r. ↓ KOΛ: to l., thyrsos (?).

(a) M. (7) ↑, 12 mm.

82. Chalkous: leg. r. ↓ KOΛ, ab. → ΠΠΟ(?): to l. thyrsos (?).

(a) V. (32964) ↑, 13 mm., 2.00 g.

GROUP F—BRONZE

CHALKOI. *Obv.* Head of Apollo r., bound with taenia, hair in waved locks.

Rev. Lyre: legend |—↓

83. Chalkous: leg. ΚΟΛΟ Φ ΩΝΙΩΝ: bel.→ I
(a) B. 11 mm. (b) L. (BMC. 16) ↑, 11 mm.

84. Chalkous: leg. ΚΟΛΟ Φ ΩΝΙΩΝ: bel.→ I H
(a) B. (Imhoof, M.G. 284/35) 11 mm. (b) B. 10 mm.

There is a very marked break between the coins of Period II and those of Period III, both in style and in technique: the former nearly always show traces of archaism in the heads on the obverse, and have a definite flat rim around the square incuse of the reverse: in the latter the heads are of a fully developed fine style, and the incuse has disappeared, or is only traceable by a slight rise around the edge of the flan. Magistrates' names appear regularly on the silver, though not often on the bronze, which began to be issued during this period. The standard of the silver coinage is changed: instead of a drachma approximately equal in metal content to the Persian siglos, the Asiatic Greek standard, commonly known as the Rhodian, was adopted, as it was, about the same time, by Ephesos and Erythrai, both commercially connected with Kolophon.

It is not necessary to assume that this break between the two periods involved a long interval in time: it could be explained as due to the reorganisation of the minting arrangements at Kolophon and

the introduction of new artists. The most probable date for such a reorganisation would be after the 'Peace of Antalkidas' in 389 B. C., which gave the Ionian cities a chance of developing their trade under a settled government and on equal terms each with its neighbour. The style of the silver coins would suit this date very well: in Group A there were evidently two artists employed, one more severe in his treatment than the other; but there is nothing in their work to prevent their being regarded as contemporaries, and that they were so is confirmed by the fact that dies from both hands were used for the same magistrates. In this group there is a single tetradrachm, by its style one of the earliest coins in the period: it has no magistrate's name, and may be taken as an exceptional denomination struck to mark the commencement of a new series. There was a fairly large issue of drachmas and diobols, both with the same types, in the names of seven magistrates: they are linked together by the common use of obverse dies.

A second group, similarly linked, but much smaller, with only two magistrates' names, seems to have followed at no long interval: the obverse dies may have been executed by the severer of the two artists of A: there are the two denominations, the drachma and diobol.

Group C consists of drachmas only, struck by three magistrates, who jointly used two obverse dies, the style of which suggests the same artist as the one of Group B: exceptionally, there is a coin struck from

an old die of Group A. This group also is practically contemporary in style with A and B.

In Group D the hand of a new artist can be seen: the head of Apollo is more effeminate and the lines softer. The obverse type, in the drachmas, is turned to right, and on the reverse the positions of the ethnic and magistrate's name are interchanged as compared with the previous groups. There is a drop in the weight of the drachma of about one-sixth.

The chronological relation of the bronze to the silver is not easy to determine: there are no similarities in style which would indicate the employment of the same artists, but rather a difference in technique which suggests that the two metals were struck at separate shops. The issues of bronze would not appear to have been large; there is only one variety which is represented here by more than two specimens: it is probable that the coinage was started on a small scale at Kolophon, where the use of bronze would be quite unfamiliar to the merchants from the interior, though the coastal cities had begun to strike it at the beginning of the fourth century. Group F is certainly later in style than Group E, but it is difficult to say whether it is necessarily much later in date of issue.

If the beginning of this period is fixed to shortly after 389, the first three groups may be taken to cover the next fifteen or twenty years, coming one after another in accordance with demands for currency. Then there may have been a gap, after which Group D may be put in the decade 360–350:

unfortunately, nothing is known of the history of Kolophon about this time which might help to determine the date of Group D by suggesting a reason for the drop in weight of the drachma. The two groups of bronze may have been spread over the whole period 389–350: they cannot be correlated with any of the groups of silver.

PERIOD IV

(c. 350 – c. 330 B. C.)

GROUP A—SILVER

DRACHMAS. *Obv.* Head of Apollo l., laur., hair rolled at back: wreath hidden behind ear by roll.
Rev. Lyre: legend on l. and r.

HALF-DRACHMAS. *Obv.* As drachmas.
Rev. Tripod: legend on l. and r.

DIOBOLS. *Obv.* and *rev.* as drachmas.

85. Drachma: leg. ↓ ΚΟΛΟΦΩ ↓ ΑΜΙΝΙΑΣ:
lyre of five strings.
(a) Athens. 15 mm., 2.82 g. (b) V. (35940 = Egger sale xlv, 830 = Merzbacher sale, Nov. 15, 1910, 686) 15 mm., 2.80 g.

86. Half-drachma: leg. ↓ ΚΟΛΟΦΩ ↓ ΚΟΝΝΙΩΝ
(a) B. (Imhoof, M.G. 284/29) 12 mm., 1.50 g. (b) B. 11 mm., 1.51 g. (c) C. (Leake) 12 mm., 1.52 g. (d) C. (Leake) 12 mm., 1.53 g. (e) K. (BP. 1054) ↓, 12 mm., 1.42 g. (f) L. (BMC. 9) ↑, 10 mm., 1.56 g. (g) O. (Naville sale iv, 847 = H. Weber 5812) ↖, 11.5 mm., 1.46 g. (h) O. ↓, 12.5 mm., 1.21 g.

[(a) (b) (g) and (h) same obv. die: (c) (d) and (f) same obv.: (a) (b) and (h) same rev.: (c) and (f) same rev.: (d) and (g) same rev.]

87A. Half-drachma: leg. ↓ ΛΕΩΔΑΜΑΣ ↓ ΚΟΛΟΦΩ

(a) Athens. 11 mm., 1.28 g. (b) B. (Imhoof, M.G. 284/31) 12 mm., 1.53 g. (c) C. (Leake) 13 mm., 1.49 g. (d) Gotha. 1.41 g. (e) O. ↖, 12 mm., 1.31 g. (f) † E. T. Newell, ↖, 12 mm., g. 1.07.

[(b) (c) and (e) same obv. die: (b) and (c) same rev.]

87B. Half-drachma: leg. ↑ ΚΟΛΟΦΩ ↑ ΛΕΩΔΑΜΑΣ

(a) Cahn sale lxviii, 1464. 12 mm., 1.21 g. (? = Philipsen sale 2096).

88. Drachma: leg. ↑ ΚΟΛΟΦΩ ↓ ΣΙΤΤΑΣ: lyre of five strings.

(a) P. (Bab., Tr. ii. 1917) 15 mm., 2.91 g. (b) Imhoof, M.G. 284/28. 16 mm., 3.50 g. (?) (c) Seyffer cat. 894. 15 mm., 3.05 g.

89. Half-drachma: leg. ↓ ΚΟΛΟΦ ↓ ΣΤΡΑΤΩΝ

(a) O. (Naville sale v, 2536) ↑, 11 mm., 1.65 g. (b) P. (Dieudonné, Mél. l. ii) 1.40 g. (c) Imhoof, M.G. 284/30. 12 mm., 1.40 g. (d) E. F. Weber sale 2767. 11 mm. 1.37 g.

90. Diobol: leg. ↓ ΚΟΛΟΦΩ ↓ ΣΤΡΑΤΩΝ: lyre of four strings.

(a) O. (Naville sale i, 2415) ↗, 9 mm., 0.99 g.

91. Half-drachma: leg. ↓ ΚΟΛΟΦ ↓ ΦΥΡΣΩΝ

(a) L. (BMC. 10) ↑, 11.5 mm., 1.56 g. (b) O.

†This piece later described and illustrated on plates as 94(a) was inserted on the manuscript at this point in the hand of E. T. Newell. Cf. note to 94.

(Neville sale i, 2414) ↑, 12 mm., 1.51 g. (c) P.
 (de Luynes 2591) 12 mm., 1.52 g.
 [(a) and (b) same obv. die.]

GROUP B—BRONZE

HALF-OBOLS. *Obv.* Head of Apollo r., laur., hair rolled.

Rev. Tripod: legend on l. and r.

CHALKOI. A. *Obv.* Head of Apollo l., laur., hair rolled.

Rev. Tripod: legend on l. and r.

CHALKOI. B. *Obv.* Head of Apollo r. or l., laur., hair rolled.

Rev. Lyre: legend on l. and r.

92A. Half-obol: leg. ↓ ΑΓΑΜΗΔΗΣ ↓ ΚΟΛΟΦΩ
 (a) V. (33567) ↑, 18 mm., 5.90 g.

92B. Half-obol: leg. ↓ ΚΟΛΟΦΩΝ ↓ ΑΓΑΜΗΔΗΣ
 (a) M. (17) ↗, 17 mm.

93. Half-obol: leg. ↓ ΠΡΩΤΑΓΟΡΑ ↓ ΚΟΛΟΦΩ
 (a) K. (KP. 1202) ↗, 18 mm.

94†. Chalkous: A: leg. ↑ ΛΕΩΔΑΜΑΣ ↑ ΚΟΛΟΦΩ
 (a) E. T. Newell. ↖, 12 mm., 1.07 g.

[(a) apparently same obv. die as 87B (a).]

95. Chalkous: B: head l.: leg. [on l. ?] ↓ ΚΟΛ:
 lyre of five strings.
 (a) B. 14 mm.

†Editor's Note: The comment "This is the silver specimen 87A (f)," appears on the manuscript in the hand of E. T. Newell. It has been so noted under 87A.

96. Chalkous: B: head r.: leg. ↑ ΚΟΛΟ ↓ ΦΩΝ:
lyre of five strings.
(a) E. T. Newell. ↑, 11 mm., 1.32 g.
97. Chalkous: B: head r.: leg. [?]
(a) E. T. Newell. ↑, 11 mm., 1.38 g.
98. Chalkous: B: head r.: leg. ↓ ΚΟΛΟΦΩ [on r. ?]:
lyre of three strings.
(a) K. (BP. 825) ↓, 11 mm.
99. Chalkous: B: head l.: leg. ↑ ΚΟΛΟΦΩ
↓ ΠΠΠΟΚΡΑ
(a) V. (33901) (= E. F. Weber sale 2770) ↑, 10 mm.,
1.00 g.
100. Chalkous: B: head l.: leg. ↑ ΚΟΛΟΦΩ
[on r. ?].
(a) B. 11 mm., 0.95 g.

The coins in this period are a rather miscellaneous collection: the silver drachmas and diobols in Group A obviously continue from the previous period, but with a great degeneration in style, and a new denomination, the half-drachma with a new reverse type, appears. Two artists appear to have been employed, but there is not much difference in merit. The bronze in Group B includes some pieces with the same types as the bronze of Period III, though with a less severe treatment of the head of Apollo: but there are also some which have as their reverse type the tripod which comes in on the silver, and several show close similarity in the Apollo heads on the obverse to some of the silver of this and the preceding periods: the style of the obverse of 92A is exactly that of 71, that of 97 is very close to it, 96 might be

from the same hand as 61 and 95 as 51, while 94 seems actually to be from the same obverse die as 87B, a silver half-drachma with the same magistrate's name. It would appear that the authorities were still experimenting with the bronze coinage, and using the types, and perhaps also the dies, of the silver: the sizes are rather varied, but there were certainly meant to be two denominations. The idea that the issues were experimental is perhaps supported by the rarity of the coins: of none of the varieties has more than a single specimen been recorded.

There is nothing in the coins themselves or in the history of Kolophon to help in fixing the limits of the period: but it seems certainly to follow on Period III, and no long interval need be assumed. The commencement of the next period can be put down with probability to about 330 B. C.: so Period IV may be taken as covering the few years from 350 to 330.

PERIOD V

(c. 330 – c. 285 B. C.)

GROUP A—BRONZE

DICHALKA. *Obv.* Head of Apollo r., laur., hair in loose locks.

Rev. Forepart of horse r.: on l., magistrate's name, below, ethnic. [The horse is sometimes bridled, sometimes saddled also: specimens of the former are noted *, of the latter **.]

- 101.** Dichalkon: leg. \uparrow ΑΙΣΧΡΙ → ΚΟΛΟ
 (a) L. (BMC. 21) \uparrow , 13 mm. (b) O. \uparrow , 15.5 mm., 1.72 g. (ethn. ΚΟ). (c) V. (30915) \uparrow , 14 mm.
- 102.** Dichalkon: leg. \uparrow ΑΝΘΗΝΩΡ → ΚΟΛΟ
 (a) P. (Bab., Tr. ii. 1926) 14 mm. (b) E. T. Newell. \uparrow , 15 mm., 1.97 g.
- 103.** Dichalkon: leg. \uparrow ΔΙΟΝΥΣΙΟΣ → ΚΟΛ
 (a) C. (Leake) 14 mm., 2.01 g. (b) P. (2876) 14 mm. (c) V. (17079) \uparrow , 15 mm.
- 104.** Dichalkon: leg. \uparrow ΔΙΟΝΥΣΙΦΑΝΗΣ → ΚΟ
 (a) Gotha. (b) K. (KP. 420) \uparrow , 15 mm. (c) P. (Wadd. 1490) 14 mm.**
- 105.** Dichalkon: leg. \uparrow ΔΙΟΝΥΣΟΔΩΡΟΣ → ΚΟ
 (a) B. (Imhoof, Gr. M. 267) 15 mm., 2.05 g.* (b) K. (KP. 773) \uparrow , 14 mm. (c) K. (KP. 921) \uparrow , 15 mm. (ethn. ΚΟΛ). (d) L. (BMC. 23) \uparrow , 14 mm. (e) O. \uparrow , 14 mm., 1.88 g.* (f) P. (2878).
- 106.** Dichalkon: leg. \uparrow ΔΙΟΦΑ → ΚΟΛΟ
 (a) B. 14 mm. (b) P. (Wadd. 1491) 13 mm. (c) L. (BMC. 20) \uparrow , 14 mm.
- 107.** Dichalkon: leg. \uparrow ΕΚΑΤΑΙΟΣ → ΚΟ
 (a) B. (Imhoof, Gr. M. 266) 14 mm., 2.20 g.* (b) K. (BP. 1106) \nearrow , 15 mm. (c) P. (Bab., Tr. ii. 1926) 15 mm.
- 108.** Dichalkon: leg. \uparrow ΕΞΗΚΕ → ΚΟΛΟ
 (a) B. (Imhoof, Kl. M. 70/4) 15 mm., 2.30 g. (b) M. (13) 14 mm.*
- 109.** Dichalkon: leg. \uparrow ΕΠΙΓΟΝΟΣ → ΚΟΛ
 (a) B. 16 mm.** (b) C. (Leake) 14 mm., 2.00 g. (c) L. (BMC. 22) \uparrow , 15 mm. (d) P. (Wadd. 1492) 15 mm., 2.40 g.* (e) V. (32318) \uparrow , 14.5 mm., 2.15 g.

110. Dichalkon: leg. ↑ ΕΡΜΟΘΕΣ → ΚΟ

(a) Gotha. (b) L. (BMC. 24) ↑, 14 mm. (c) O. ↑, 15 mm., 2.10 g.** (d) V. (33285) ↑, 15 mm., 2.15 g.

111. Dichalkon: leg. ↑ ΙΗΝΗΣ → ΚΟΛ

(a) B. 13 mm.*

112. Dichalkon: leg. ↑ ΘΡΑΣΥΚΛΗΣ → ΚΟ

(a) B. (Imhoof, Kl. M. 70/5) 16 mm., 2.01 g.** (b) L. (1895) ↑, 15 mm. (c) O. ↑, 15 mm., 1.94 g.**

113. Dichalkon: leg. ↑ ΚΛΕΑΝΔΡΟΣ → ΚΟ

(a) B. (Imhoof, Kl. M. 70/6) 15 mm., 2.12 g.* (b) G. (Hunter cat. 3) 16 mm., 1.94 g. (c) K. (KP. 990) ↑, 14 mm.* (d) L. (BMC. 25) ↑, 14 mm. (e) P. (Bab., Tr. ii. 1926).

114. Dichalkon: leg. ↑ ΚΟΝΝΙΣ → ΚΟΛ

(a) B. 16 mm.** (ethn. ΚΟ). (b) K. (KP. 921) ↑, 14 mm.* (c) M. (11) ↑, 14.5 mm. (d) P. (Wadd. 1493) 14 mm.**

115. Dichalkon: leg. ↑ ΛΕΩΔΑΜΑΣ → ΚΟΛ

(a) B. 14 mm.** (b) B. 14 mm.** (c) C. (McClellan 8051) ↑, 14 mm., 2.19 g. (d) K. (KP. 753) ↑, 14 mm.* (e) L. (BMC. 26) ↑, 14 mm. (f) M. (12) ↑, 14.5 mm. (g) E. T. Newell. ↑, 15 mm., 2.04 g.

116. Dichalkon: leg. ↑ ΜΗΤΡΟΔΩΡΟΣ → ΚΟ

(a) B. 15 mm.* (b) P. (Wadd. 1494) 15 mm.**

117. Dichalkon: leg. ↑ ΜΙΤΥΣ → ΚΟΛ

(a) B. 13 mm.*

118. Dichalkon: leg. ↑ ΠΑΣΙ → ΚΟΛ

(a) P. (Wadd. 1495) 12 mm.

119. Dichalkon: leg. ↑ ΠΛΑΤΩΝ → ΚΟΛ

(a) f. H. Weber. (cat. 5819). 13 mm., 1.98 g.

- 120.** Dichalkon: leg. $\uparrow \Sigma KY \Theta I \rightarrow KO \Lambda O$
 (a) K. (KP. 146) \uparrow , 14 mm. (b) P. (2878a) (ethnic KO).
- 121.** Dichalkon: leg. $\uparrow \Sigma \Omega K P A T H \Sigma \rightarrow KO \Lambda$
 (a) B. (Imhoof, Gr. M. 268) 15 mm., 2.20 g.**
 (b) C. (Leake) 14 mm., 1.99 g. (c) Gotha. (d) K. (KP. 1172) \uparrow , 14.5 mm. (e) P. (Wadd. 1496) 13 mm.** (f) V. (17078) \uparrow , 14 mm. (g) E. T. Newell. \uparrow , 15 mm., 1.94 g. (h) f. H. Weber (5820) 14 mm., 2.07 g.

GROUP B—BRONZE

HALF-OBOLS. *Obv.* Head of Apollo r., bound with taenia, hair in close locks.

Rev. Lyre: legend and symbol variously arranged.

CHALKOI. *Obv.* As half-obols.

Rev. Lyre: ethnic in field, magistrate's name below.

- 122.** Half-obol: [? symbol on l.], r. \downarrow AKΑΣΤ[
 [? bel. K O]
 (a) B. (Imhoof, Kl. M. 71/9). 17 mm., 5.60 g.
- 123.** Half-obol: i.f. \rightarrow K O, to r. tripod, bel. \rightarrow
 [Δ]ΙΟΝΥΣΙ[ΟΣ]
 (a) B. 19 mm.
- 124.** Half-obol: to l. tripod, r. \downarrow EKATAΙΟΣ, bel.
 \rightarrow KO
 (a) K. (KP. 765) \nearrow , 19.5 mm.
- 125.** Chalkous: i.f. \rightarrow K O, bel. \rightarrow [M]ΗΝΙΣΚΟ[Σ].
 (a) B. (Imhoof, Kl. M. 71/10) 11 mm., 1.66 g.
- 126.** Half-obol: i.f. \rightarrow K O, to r. tripod, bel. \rightarrow
 ΜΟΙΡΑΣ
 (a) L. (BMC. 17) \uparrow , 18 mm. (b) L. (BMC. 18)

→, 18 mm. (c) M. (9) ↓, 18 mm. (d) V. (28983)
←, 18 mm.

127. Chalkous: i.f. → K O, bel. → ΠΑΥΣΑΝΙΑ[Σ]
(a) L. (BMC. 12) ↑, 11 mm.

GROUP C—BRONZE

HALF-OBOLS. *Obv.* Head of Apollo r., laur., hair
in loose locks.

Rev. Horseman riding r. with spear couched:
above, ethnic, and to l., lyre; bel., magistrate's
name.

128. Half-obol: leg. → K O Λ ΛΑΜΕΜΠΤΟΣ
(a) B. (Imhoof, Gr. M. 271) 19 mm., 5.38 g. (b) C.
(McClean 8053) ↖, 17 mm., 5.48 g. (c) K. (KP.
1172) ↖, 18 mm. (d) L. (BMC. 27) ↖, 18 mm.
(e) O. ↖, 19 mm., 4.13 g. (f) V. (34105) ↖, 19
mm., 5.03 g.

[(a) and (e) same dies.]

129. Half-obol: leg. → K O Λ ΛΑΡΙΣΤΟΦΑΝΗΣ
(a) Aberdeen. (Calder) 18 mm., 3.97 g. (b) B.
19 mm. (c) K. (KP. 894) ↖, 18 mm. (d) L.
(1890) ↑, 18 mm. (e) V. (36616) ↖, 19 mm., 5.18 g.

130. Half-obol: leg. → K O Λ ΛΑΛΑΥΚΟΣ
(a) B. 17 mm. (b) K. (KP. 1016) ↑, 18 mm. (c)
L. (BMC. 28) ↑, 16 mm. (d) V. (29873) ↑, 18 mm.

131. Half-obol: leg. → K O Λ ΛΑΗΙΚΛΟΣ
(a) K. (KP. 1202) ↖, 19 mm. (b) L. (BMC. 29)
↑, 19 mm. (c) O. ↖, 19 mm., 5.71 g. (d) f. H.
Weber (5823) 17 mm., 5.18 g.

132. Half-obol: leg. → K O Λ ΛΑΙΟΝΥΣΙΦΑΝΗΣ
(a) B. (Imhoof, M.G. 285/36) 18 mm., 3.30 g. (b)
K. (KP. 889) ↖, 18 mm. (c) K. (R. 4) ↖, 19 mm.

- (d) P. (Bab., Tr. ii. 1929) 18 mm. (e) V. (32134) ↖, 19 mm. (f) V. (32135) ↖, 19 mm. (g) E. T. Newell. ↑, 19 mm., 4.71 g.
- 133.** Half-obol: leg. →KO Λ ◡ΕΡΜΙΠΠΟΣ
(a) L. (BMC. 30) ↑, 18 mm.
- 134.** Half-obol: leg. →K O Λ ◡ΗΓΗΣΙΑΝΑΞ
(a) C. (Leake) 16 mm., 5.33 g. (b) K. (KP. 889) ↖, 18 mm. (c) L. (BMC. 31) ↖, 18 mm. (d) O. ↖, 18 mm., 5.18 g. (e) P. (Bab., Tr. ii. 1929) 18 mm. (f) V. (32133) ↖, 17 mm.
- 135.** Half-obol: leg. →K OΛ ◡ΗΛΙΑΝΑΞ
(a) L. (BMC. 32) ↖, 20 mm. (b) M. (15) ↑, 18 mm. (c) O. ↑, 18 mm., 5.41 g. (ethnic KO Λ)
- 136.** Half-obol: leg. →KO Λ ◡ΙΚΕΣΙΟΣ
(a) B. 19 mm. (b) K. (R. 3) ↑, 19 mm., 4.40 g. (c) L. (BMC. 33) ↖, 18 mm. (d) M. (14) ↑, 20 mm. (e) O. ↑, 17 mm., 6.12 g. (f) E. T. Newell. ↑, 18 mm., 4.62 g.
- 137.** Half-obol: leg. →KO Λ ◡ΜΗΤΡΟ[
(a) L. (BMC. 34) ↑, 19 mm.
- 138.** Half-obol: leg. →KO Λ ◡ΠΑΝΤΑΓΝΩΤΟΣ
(a) K. (KP. 990) ↖, 18 mm. (ethn. K O Λ) (b) K. (KP. 1134) ↖, 19 mm. (c) P. (Wadd. 1497) 20 mm. (d) Egger Sale xlv, 831. 18 mm., 4.70 g.
- 139.** Half-obol: leg. →KO Λ ◡ΠΛΑΤΩΝ
(a) B. (Imhoof, M.G. 285/37) 18 mm., 5.50 g. (b) B. 17 mm. (ethn. K O Λ) (c) Gotha. (d) K. (KP. 753) ↖, 18 mm. (ethn. K O Λ) (e) L. (BMC. 35) ←, 14 mm.
- 140.** Half-obol: leg. →K O Λ ◡ΘΗΛΕΓΟΝΟΣ
(a) B. 18 mm. (b) L. ↖, 18 mm. (c) P. (Wadd. 1498) 17 mm.

141. Half-obol: leg. →K O Λ Λ ΦΑΝΑΙΟΜ[
(a) L. (1898) ↑, 18 mm.

GROUP D—BRONZE

HALF-OBOLS. *Obv.* Head of Apollo r., laur., hair long.

Rev. Lyre: on l. magistrate's name, on r. ethnic and symbol.

142. Half-obol: leg. ↓[Δ]ΙΟΝΥΣΙΟΣ, ↓KO and spearhead upwards.

(a) B. (Imhoof, Kl. M. 71/11) 18 mm., 6.12 g.

143. Half-obol: leg. ↑ΛΕΟΝΤΙΚΟC, ↓KO and spearhead upwards.

(a) L. (BMC. 19) ↓, 19 mm.

144. Half-obol: leg. [on l. ?], ↓KO and spearhead upwards.

(a) K. (KP. 765) ↑, 18 mm.

GROUP E—BRONZE

DICHALKA. *Obv.* Head of Apollo three-quarters l., laur., hair long.

Rev. Lyre: on l., magistrate's name, bel., ethnic, to r., symbol.

145. Dichalkon: leg. ↑ΕΡΑΣΙΝΙΑ ΗΣ, →K O, palm-tree.

(a) B. (Imhoof, A.G.M. 107) 16 mm., 1.93 g. (b) L. ↑, 15 mm.

146. Dichalkon: leg. ↑ΘΡΑΣΥΚΛΗΣ, →K O, palm-tree.

(a) B. (Imhoof, Kl. M. 70/3) 15 mm., 1.96 g. (b) Gotha.

The fifth period is marked by a material change in the general character of the coinage: the issue of silver came practically to an end, as there are no silver pieces which can be assigned to this period, and only two issues of later date, both apparently isolated, are known. The output of bronze, on the other hand, increased greatly, and new types were introduced: the old Apollo/lyre type lingered on, but the bulk of the coins had for reverse types either an armed horseman or a half-horse. These were presumably designed to provide two related denominations: the weights are irregular, as in most Greek bronze series, but the sizes are fairly constant. The coins with the lyre reverse are of more varied size, and it is difficult to determine in what precise relation they stand: it is noticeable that most have, in addition to the magistrate's name, a symbol in the field of the reverse, which is not a characteristic of the two new types, and may be intended to distinguish these, not only from the contemporary coins of other types, but from earlier series of the same type.

From the point of view of style, Group A—the type with the half-horse reverse—looks generally earlier than Group C: the head of Apollo on the obverse of the former is in the tradition of that of Group E of Period III, with a slightly more advanced treatment and general softening of the lines, while that of Group C is much less severe. Judged by the number of magistrates' names known, Group A seems to have covered more years than Group C: it

is not unlikely that the two overlapped, though there are only two names common to both; but this may be explained on the assumption that colleagues on the monetary board took the responsibility of different denominations, as was almost certainly the case in other Greek minting cities. The apparent discrepancy in artistic style might then be due to Group A having started a few years earlier than Group C; and, the general type having been fixed, subsequent issues adhered as closely as possible to it: Group C began with a more advanced design, and that was similarly regarded as a standard for later artists.

Of the smaller groups, B looks contemporary with A, and D with C: E is, in style, somewhat later than any of the others. If the denominations assumed for the various sizes are correct, it seems likely that the new type of A was introduced for dichalka, and the lyre reverse, in two sizes, retained for half-obols and chalkoi: after a few issues of the latter, half-obols with the lyre type but with a different symbol, a spearhead instead of a tripod, were struck, forming Group D: but almost at once the new type of C was adopted for the half-obols: then, towards the end of the period, dichalka of Group E were substituted for those of Group A.

As regards the date, it would be reasonable on economic grounds to think that the conquest of Asia by Alexander would tend to revive trade between Kolophon and Greece, especially after the refoundation of Smyrna, with which Kolophon had tradi-

tional links. There would not be a serious need for a local silver coinage, as that of Alexander was plentiful; but in bronze, small denominations would be wanted to supplement the Alexandrine issues: so far as can be judged by finds, the bronze of Alexander did not circulate in Ionia as fully as his silver. That Kolophon was a flourishing centre of trade at this time is certainly indicated by the inscription published in A.J.Ph. 1935, 358 ff., which gives a long list of subscriptions towards the walling of the old town about 307 B. C., and shows that there were overseas connexions with several places. The period may thus be taken to begin about 330, and probably ended with the removal of a substantial part of the population of Kolophon to Ephesos by Lysimachus about 285.

PERIOD VI

(c. 285 – 190 B. C.)

GROUP A—SILVER

DIDRACHMS. *Obv.* Head of Apollo l., laur., hair in loose locks.

Rev. Lyre of five strings: legend on l. and r.

147. Didrachm: leg. ↓ ΚΟΛΟΦΩ ↓ ΔΙΝΑΡΧΟΣ

(a) V. (17075) ↗, 18 mm., 5.63 g.

GROUP B—BRONZE

HALF-OBOLS. *Obv.* Head of Apollo r., laur., hair in loose locks.

Rev. Horseman riding r. with spear couched:

above, ethnic and to l. lyre, bel., magistrate's name.

TRICHALKA. *Obv.* As half-obols.

Rev. Horse walking r.: ab., ethnic, bel., magistrate's name.

DICHALKA. *Obv.* As half-obols.

Rev. Forepart of horse r.: ab., ethnic, bel., magistrate's name.

148. Half-obol: leg. →Κ ΟΛ, ∟ΑΓΑΜΗΔΗΣ

(a) P. (Bab., Tr. ii. 1929). 13 mm.

149. TRICHALKON: leg. →ΚΟΛ, ∟ΑΓΑΜΗΔΗΣ

(a) K. (KP. 640) ↑, 13 mm. (b) L. (BMC. 36) ↑, 11 mm.

150. Dichalkon: leg. →ΚΟΛ ∟ΑΓΑΜΗ[ΔΗΣ]

(a) Winterthur. (Imhoof, G.R.M. 70/4) 10 mm., 0.90 g.

151. Half-obol: leg. →ΚΟ Λ, ∟ΔΩΣΙΘΕΟΣ

(a) K. (KP. 1016) ↑, 15 mm.

152. Trichalkon: leg. →ΚΟΛ, ∟ΔΩΣΙΘΕΟΣ

(a) Gotha. (b) V. (30691) ↑, 13 mm.

153. Dichalkon: leg. →ΚΟ ∟ΔΩΣΙΘΕΟΣ

(a) B. (Imhoof, Kl. M. 71/7) 11 mm., 1.12 g. (b) L. (1927) ↑, 10 mm.

154. Dichalkon: leg. →ΚΟΛ, ∟ΘΕΟΔΩΡΟΣ

(a) Gotha. 12 mm.

155. Half-obol: leg. →ΚΟ Λ ∟ΙΚΕΣΙΟΣ

(a) B. 16 mm. (b) G. (Hunter cat. 324/4) 16 mm., 2.62 g. (c) K. (KP. 554) ↑, 15 mm., 2.72 g.

156. Trichalkon: leg. →ΚΟΛ →ΛΙΧΑΣ

(a) O. ↑, 14 mm., 1.77 g.

157. Dichalkon: leg. →ΚΟΛ →ΛΙΧΑΣ

(a) B. (Imhoof, Gr. M. 269) 12 mm., 1.25 g.

158. Dichalkon: leg. →ΚΟ ↵ ΜΗΤΡΟΔ

(a) B. 11 mm. (b) K. (KP. 1261) ↗, 10 mm. (c) V. (34891) ↗, 12 mm., 1.24 g.

159. Trichalkon: leg. →ΚΟΛ ↵ ΘΛΑΕΓΟΝΟΣ

(a) B. (Imhoof, Gr. M. 270) 13 mm., 1.58 g. (b) K. (KP. 1158) ↑, 13 mm.

160. Dichalkon: leg. →ΚΟΛ ↵ ΘΛΑΕΓΟΝΟΣ

(a) B. (Imhoof, Kl. M. 71/8) 11 mm., 0.90 g. (b) B. 12 mm. (c) L. (BMC. 37) ↘, 11 mm. (d) V. (36617) ↘, 12 mm. 1.10 g. (Ethnic KO)

GROUP C—BRONZE

HALF-OBOLS. *Obv.* Head of Apollo r., laur., hair in loose locks.

Rev. Tripod: legend on l. and r.

161. Half-obol: leg. ↓ ΑΠΟΛΛΩΝΟ[↓ ΚΟΛΟΦΩ

(a) B. (Imhoof, A.G.M. 106a) 13 mm., 2.05 g.

162. Half-obol: leg. ↑ ΑΡΤΕΜΙΑ[↓ ΚΟΛΟΦΩ

(a) V. (33618) ↓, 12.5 mm., 3.04 g.

163. Half-obol: leg. ↑ ΑΦΘΟΝΗ[↓ ΚΟΛΟΦΩ

(a) B. (Imhoof, Kl. M. 71/12) 12 mm., 2.50 g.

The issues of this period are almost entirely in Group B, which is of bronze in three sizes: other varieties are represented by single specimens, which are placed here on grounds of style, but do not appear to have any other link. The coins of Group B look like a continuation of two of the denominations of the previous period, the half-obols of Group C and the

dichalka of Group A, with a new denomination of a new reverse type introduced between them, which would presumably be a trichalkon: there is a considerable drop in size and weight from the corresponding series of Period V, which may point to a decline in the prosperity of the city. This same reason may account for the fact that one magistrate might strike all three denominations, which is very rare in Period V: if, as suggested above, the issue of coins at Kolophon was of the nature of a liturgy, it might be difficult in an impoverished community to find many citizens able to undertake the responsibility, and each nominee might have to bear a more varied burden. This might well be the case after the city had been depleted of many of its inhabitants by Lysimachus: under his plan of aggrandising Ephesos and Smyrna, these would take away much of the trade from the interior which had previously passed through Kolophon: and for a considerable time thereafter, when it was apparently a frontier garrison post, it would derive most of its currency from the pay of the soldiers. This period therefore may be taken as commencing about 285 B. C.: it probably continued till the battle of Magnesia and the political rearrangement of the Ionian cities which followed. The solitary silver coin, which does not seem to be related to any of the earlier issues, looks to be of about this date, but no reason for its appearance can be suggested.

PERIOD VII

(c. 190 B. C. – Imperial)

GROUP A—SILVER

TETRADRACHMS. *Obv.* Head of Apollo r., laur., hair in long curls.

Rev. Apollo standing r., in long robe, holding in r. hand branch with fillets, resting l. on lyre: legend on l.: in laurel wreath.

164. Tetradrachm: leg. ↓ ΚΟΛΟΦΩΝΙΩΝ

(a) L. (Brit. Mus. Quart. iv. 35). (b) P. (Wadd. 1489) 34 mm., 15.25 g.

GROUP B—BRONZE

OBOLS. *Obv.* Head of Apollo r., laur., hair in stiff curls: b. d.

Rev. Horse walking r.: ab., on l., ethnic; bel., magistrate's name; between forelegs, letter.

HALF-OBOLS. *Obv.* As obols.

Rev. Tripod with lebes, fillet hanging at each side: legend on l. and r.

DICHALKA. *Obv.* Horseman riding r., with spear couched: bel., wolf (?) running r.

Rev. Apollo standing r., in long robe, holding in r. patera over tripod, in l. lyre: legend on l. and r.

CHALKOI. *Obv.* Bust of Artemis r., wearing stephane, bow and quiver at shoulder.

Rev. Piloι surmounted by stars: legend below.

165. Obol: leg.

→ΚΟΛΟΦΩ, →ΑΡΤΕΜΙΑΔΩΡΟΣ, Μ
ΝΙΩΝ

(a) B. 23 mm. (b) G. (Hunter cat. 325/6) 24 mm., 10.23 g. (c) K. (2) ↑, 22 mm.

166. Half-obol: leg. ↓ APTEMIAΔΩΡΟΣ, ↓ ΚΟΛΟΦΩΝΙΩΝ

(a) B. 22 mm. (b) B. 21 mm. (c) B. 21 mm. (d) G. (Hunter cat. 325/5) 21.5 mm., 8.81 g. (e) Gotha. (f) K. (C.R. viii. 1) ↑, 22 mm. (g) O. ↑, 21 mm., 8.22 g. (h) P. (Wadd. 1500) 20 mm. (i) V. (17082) ↑, 21.5 mm. (k) V. (20985) ↑, 21 mm. (l) V. (28986) ↑, 22 mm. (m) V. (30914) ↑, 22 mm.

[(a) and (g) same obv. die: (b) and (c) same obv. die.]

167. Chalkous: leg. → ΚΟΛΟΦΩΝΙΩΝ
APTEMIAΔΩΡΟΣ

(a) E. T. Newell. ↑, 15 mm., 2.27 g.

168. Obol: leg.

→ ΚΟΛΟΦΩ, → ΕΚΑΤΟΔΩΡΟΣ, Μ
ΝΙΩΝ

(a) B. 23 mm. (b) O. ↑, 24.5 mm., 12.48 g. (c) E. T. Newell. ↑, 23 mm., 9.51 g.

[(a) (b) and (c) same obv. die and same as 171 (a): (a) and (c) same rev.]

169. Dichalkon: leg. ↓ ΚΟΛΟΦΩΝΙΩΝ ↓ ΕΠΙΓΟΝΟΣ

(a) B. 19 mm. (b) B. 19 mm. (c) Gotha. (d) L. (BMC. 38) ↑, 20.5 mm. (e) L. (BMC. 39) ↑, 20.5 mm. (f) O. ↑, 18 mm., 3.39 g. (g) V. (33566) ↑, 20 mm., 5.87 g.

170. Chalkous: leg. → ΚΟΛΟΦΩΝΙΩΝ
ΕΠΙΓΟΝΟΣ

(a) B. 16 mm. (b) Gotha. (c) K. (BP. 894) ↑, 15 mm. (d) L. (BMC. 40) ↑, 15.5 mm.

171. Obol: leg.

→ΚΟΛΟΦΩ, →ΜΗΤΡΟΔΩΡΟΣ, Μ
ΝΙΩΝ

(a) O. (Godwyn) ↑, 25.5 mm., 12.09 g.

[(a) same obv. die as 168 (a) (b) and (c).]

**172. Dichalkon: leg. ↓ ΚΟΛΟΦΩΝΙΩΝ ↓ ΜΗΤΡΟ-
ΔΩΡΟΣ**

(a) B. 21 mm. (b) B. 20 mm. (c) C. (Leake) 20
mm., 5.66 g. (d) K. (KP. 990) ↑, 21 mm. (e) M.
(20) ↑, 20 mm.

**173. Chalkous: leg. →ΚΟΛΟΦΩΝΙΩΝ
ΜΗΤΡΟΔΩΡΟΣ**

(a) B. 15.5 mm. (b) K. (BP. 1261) ↑, 15 mm. (c)
Len. 15 mm., 4.04 g. (d) L. (BMC. 41) ↑, 15.5
mm. (e) L. ↑, 16 mm. (f) M. (19) ↑, 15 mm. (g)
V. (17080) ↑, 15.5 mm.

GROUP C—BRONZE

HALF-OBOLS. *Obv.* Head of Apollo to front, slightly
l., laur., hair long.

Rev. Tripod with lebes: legend on l. and r.

**174. Half-obol: leg. ↑ ΑΠΟΛΛΩΝΙΑΔΗΣ ↑ ΚΟΛΟ-
ΦΩΝΙΩΝ**

(a) K. (KP. 1261) ↖, 18 mm. (b) M. (16) ↑, 19
mm. [rev. cmk. lyre]. (c) O. ↑, 19 mm. 4.96 g.

**175. Half-obol: leg. ↑ ΔΗΜΗΤΡΙΟΣ ↑ ΚΟΛΟΦΩΝ-
ΙΩΝ**

(a) B. (Imhoof, M.G. 285/38) 18 mm., 3.82 g. (b)
B. 18 mm. [rev. cmk. lyre]. (c) B. 17 mm. [rev.
cmk. lyre]. (d) L. (1920) ↑, 19 mm., 4.98 g. [rev.
cmk. lyre]. (e) O. ↑, 17.5 mm., 6.02 g. [rev. cmk.
lyre]. (f) P. (Wadd. 1501) 18 mm.

176. Half-obol: leg. ↑ ΙΚΕΣΙΟΣ ↑ ΚΟΛΟΦΩΝΙΩΝ
 (a) B. 17 mm. (b) B. 17 mm. [rev. cmk. lyre]. (c)
 C. (Leake) 16 mm., 4.77 g. (d) Gotha. 18 mm.
 [rev. cmk. lyre]. (e) K. (KP. 621) ↑, 17 mm., 4.28
 g. [rev. cmk. lyre]. (f) E. T. Newell, ↑, 17 mm.,
 2.64 g.

GROUP D—BRONZE

CHALKOI. *Obv.* Head of Helios r., rad.

Rev. Lyre: legend on l. and r.

177. Chalkous: leg. ↓ ΙΗΝΩΝ ↓ ΚΟΛΟ

(a) B. (Imhoof, Kl. M. 71/13). 15 mm., 2.75 g.

GROUP E—BRONZE

OBOLS. *Obv.* Homor seated l. on high-backed
 throne, wearing himation, resting chin on r. hand,
 holding roll in l. on knee: to l., magistrate's
 name.

Rev. Apollo standing r., wearing long robe, hold-
 ing in r. hand patera, in l. lyre: to l. ethnic.

178. Obol: leg. ↓ ΑΠΟΛΛΑΣ: ↓ ΚΟΛΟΦΩΝΙΩΝ

(a) B. 19 mm. (b) B. 20 mm. (c) B. 19 mm. (d)
 B. 18 mm. (e) C. (Leake) 18 mm., 5.40 g. (f) C.
 (Leake) 18 mm., 6.13 g. (g) C. 18 mm., 6.05 g. (h)
 G. (Hunter cat. 325/7) 19 mm., 6.60 g. (i) Gotha.
 (k) K. (Thomsen 1391) ↑, 17 mm. (l) K. (KP.
 1010) ↑, 19 mm. (m) Len. 19 mm., 5.82 g. (n) L.
 (BMC. 42) ↑, 18 mm. (o) L. ↑, 20 mm. (p) M.
 (21) ↑, 20 mm. (q) O. (Godwyn) ↑, 17.5 mm.,
 5.25 g. (r) O. (Godwyn) ↑, 18 mm., 5.42 g. (s)
 O. ↑, 18.5 mm., 5.01 g. (t) V. (17083) ↑, 20 mm.
 (u) V. (32131) ↑, 19 mm. (w) V. (32132) ↑, 19 mm.
 (x) V. Schottenst. (3222) 18 mm., 6.25 g. (y) V.
 Schottenst. (3223) 19 mm., 5.64 g. (z) E. T.

Newell. ↑, 19 mm., 5.70 g. (aa) E. T. Newell. ↑, 20 mm., 5.62 g. (bb) f. H. Weber. (5827) 18 mm., 7.12 g.

179. Obol: leg. ↓ ΠΥΘΕΟΣ : ↓ ΚΟΛΟΦΩΝΙΩΝ

(a) Athens. 20 mm. (b) B. 19 mm. (c) B. 18 mm. (d) C. (Leake) 18 mm., 5.85 g. (e) C. (Leake) 19 mm., 5.19 g. (f) C. (McClean 8054) ↑, 19 mm., 4.30 g. (g) C. 19 mm., 6.59 g. (h) Gotha. (i) K. (4a) ↑, 17.5 mm. (l) K. (KP. 964) ↑, 19 mm. (m) Len. 16 mm., 5.56 g. (n) Len. 19 mm., 5.85 g. (o) L. (BMC. 43) ↑, 18 mm. (p) L. ↑, 19 mm. (q) L. ↑, 20 mm. (r) M. (22) ↑, 19.5 mm. (s) New York. (Ward cat. 669) 19 mm., 6.49 g. (t) O. ↑, 20 mm., 5.36 g. (u) V. (31403) ↑, 20 mm. (w) E. T. Newell. ↑, 19 mm., 5.99 g. (x) f. H. Weber. (5828) 17 mm., 5.70 g.

[(b) and (d) same obv. die.]

The coins of this period are again a very miscellaneous collection: the one issue of spread tetradrachms not improbably came soon after 190 B. C., and may have been made as a demonstration of the liberation of Kolophon from regal control and its claim to rank alongside the other cities which struck similar coins: but it was evidently short-lived, and had no economic justification. The bronze coins are all, by style, to be placed a good deal later: none of them could reasonably be dated before the first century B. C., and they do not seem to have any close connection with any earlier series. Probably there was a complete break in the mintage of bronze at Kolophon in the second century: such importance as it had possessed in the third century, as a frontier

post between competing rulers, Seleukids and Ptolemies, or Attalids and Seleukids, would disappear, and any bronze currency that it needed could be supplied by the abundant issues of Smyrna. It is noteworthy that the American excavations of 1921-2 produced only one or two autonomous coins of Kolophon of Periods VI and VII, though those of Period V were abundant.

The chief group is B, of four sizes, which are linked not only by style, but by names of magistrates. It is tempting to identify the Epigonos, who is one of the four magistrates whose names appear in this group, with the 'tyrant' who is mentioned by Plutarch as suppressed by Lucullus: in this case the group would represent an issue for local currency at the time of the Mithridatic revolt, when it would be not unlikely to find a city in the position of Kolophon putting out its own coins: the animal running under the horse on the obverse of the dichalkon may be a wolf, representing Rome, at which the Kolophonian horseman is striking. Group C seems rather later: it was evidently an issue which did not find much favour, as more than half the known specimens are countermarked, and probably date in the time of confusion about 50 B. C. The solitary coin in D cannot be placed exactly, but may be about the same date. The very crude style of the coins in Group E, which constitute a large output by two magistrates, points to their being the last of the autonomous issues of Kolophon, presumably just before the establishment of the Roman Empire.

IMPERIAL PERIOD

The arrangement of the coins struck under the Roman Empire has been made on the general lines adopted in the Ashmolean Museum Catalogue of Alexandrian Coins. The obverse-legends of each Emperor are classified at the head of the entries for his reign, and referred to by letters in the descriptions of the individual types. The reverse-types are specified summarily in these descriptions, and a fuller account of each type is given in an Appendix.

Several coins described by Mionnet have been omitted, as it has not been possible to verify them. Of these, some, quoted on Vaillant's authority, may be correct—Suppl. vi. 100/130 of Domitian; Suppl. vi. 101/137 of Aurelius; iii. 78/127 and Suppl. vi. 103/149 of Caracalla and Geta; Suppl. vi. 104/151 of Macrinus; Suppl. vi. 105/157 of Gordian III; and Suppl. vi. 108/172 of Etruscilla: and similarly Suppl. vi. 102/142 of Caracalla; and iii. 79/130 of Macrinus, from Sestini. Suppl. vi. 100/129 of Nero (Mus. Sancl.); and Suppl. vi. 105/159 of Gordian III (Gessner), are not likely: and iii. 83/148 of Valerian (Banduri) is probably type 261 of Volusian.

AUGUSTUS

Obverse Types

A. (ΣΕΒΑ) ΣΤΟΣ

180. A. Head r. laur.

1. ↓ ΚΟΛΟΦΩ Apollo seated r.
ΝΙΩΝ

(a) B. 20 mm.

DOMITIANUS

Obverse Types

A. (ΔOMITIANOCKAICAPCEB) ACTOC-
ΓEPMANIKOC

181. A. Head r. laur.

(ΚΟΛΟΦΩ[NIΩN] Apollo seated l. (b): i.f.l.
→ΚΛΑΡΙC

(a) L. ↗, 23 mm.

DOMITIA

Obverse Types

A. (ΔOMITIA) CEBACTH

182. A. Bust r. draped.

(ΚΟΛΟΦΩ) ΔΗΤΩOC Apollo standing l.

(a) B. 20 mm.

TRAJANUS

Obverse Types

A.) AVKAIΘEOVVΩNEP (TPATIANOCCE-
ΓEPMA

B.) AVKAIΘEOVVΩN (EPBATPATIANOC-
CEBΓEPM

C.) AVKAIΘEOVVΩ (NEPTPATIANOCCEB-
ΓEPM

D1.) AVKAIΘEVΩNE (PTPATIANOCCE-
ΓEPM

D2.) AVKAIΘEVΩN (EPTPATIANOCCE-
ΓEPM

183. A. Head r. laur., drapery about neck.

↖ ΚΟΛΟΦ (ΩNI ↖ ΚΛΑ) P IOC Apollo
seated l. (c).

(a) B. 30 mm. (b) M. 31 mm. [= Mi. iii. 77/122].

[Both same dies; same obv. as 184c (a).]

184A. A. Head r. laur., drapery about neck.

(⤴ ΑΡΤΕΜΙΚΚΛΑΡ ⤵) ΙΑΚΟΛΟΦΩΝΙΑ Artemis standing to front.

(a) B. 31 mm. (b) O. ↗, 34 mm., 17.48 g. [round cmk. on rev., bee].

[Both same obv. die.]

184B. As 184A, but rev. leg. (⤴ ΑΡΤΕΜΙΚΚΛΑ ⤵) ΠΙΑΚΟΛΟΦΩΝΙΑ

(a) K. (KP. 1261). 30 mm. (b) V. (34198). 30 mm., 21.67 g.

184C. As 184A, but rev. leg. (⤴ ΑΡΤΕΜΙΚΚΛΑ ⤵) ΑΡΙΑΚΟΛΟΦΩΝΙΑ

(a) L. (BMC. 42/45). 32 mm.

[Same obv. die as 183 (a) and (b).]

185A. B. Head r. laur.

(⤴ ΑΡΤΕΜΙΚΚΛΑΡ ⤵) ΙΚΟΛΟΦΩΝΙΑ Artemis standing to front.

(a) B. 25 mm. [round cmk. on rev., bee]. (b) B. 25 mm. [similar cmk.].

[Both same obv. die, and same as 185B (a), 185c (a), and 187A (a).]

185B. As 185A, but rev. leg. (⤴ ΑΡΤΕΜΙΚΚΛΑ ⤵) ΠΙΑΚΟΛ[]

(a) B. 25 mm.

[Same obv. die as 185A (a) and (b), 185c (a), and 187A (a).]

185C. As 185A, but rev. leg. (⤴ ΑΡΤΕΜΙΚΚΛΑ ⤵) ΑΡΙΑΚΟΛΟΦΩΝΙΑ

(a) O. (Raye). 24 mm., 8.23 g. (b) V. (34844). 25 mm. 6.97 g.

[(a) same obv. die as 185A (a) and (b), 185B (a), and 187A (a).]

186. C. Head r., laur.

(⤴ ΑΡΤΕΜΙΣΚΛ ⤵) ΑΡΙΚΟΛΟΦΩΝΙ Artemis standing to front.

(a) B. 25 mm.

187A. B. Head r., laur.

(⤴ ΚΟΛΟΦΩΝ ⤵) ΙΩΝΚΛΑΡΙΑ Artemis standing to front.

(a) L. (BMC. 42/44). 25 mm.

[(a) same obv. die as 185a (a) and (b), 185b (a), and 185c (a).]

187B. As 187A ? (obv. leg. uncertain), but rev. leg.

(⤴ ΚΟΛΟΦΩ ⤵) ΝΙΚΛΑΡΙΑ

(a) Gotha. 24 mm.

188. D1. Head r., laur.

(⤴ ΑΡΤΕΜΙΣ ⤵) ΚΟΛΟΦΩ Artemis standing to front.

(a) B. 20 mm. [=Imhoof, Kl. M. 71/14].

189. D2. Head r., laur.

(⤴ ΑΡΤΕΚΟΛΟ ⤵) ΦΩΝΙΑ Artemis standing to front.

(a) B. 21.5 mm. (b) B. 20.5 mm. (c) M. 22 mm.

(d) M. 19.5 mm.

[(a) and (b) same dies.]

ANTONINUS PIUS

Obverse Types

A. (⤴ ΤΑΙΚΑΙΣΑΝ ⤵) ΤΩΝΕΙΝΟC

B. (⤴ ΑΥΤΚΑΙΣΤΑΙ ⤵) ΑΝΤΩΝΕΙ

C. (⤴ ΑΝΤΩΝΕΙΝ ⤵) ΟΥΚΑΙΣΑΡ

190. A. Head r., bare, drapery on l. of neck.

(↑ ΚΟΛΟΦΩΝΙ) ΩΝ ΚΛΑΡΙ ↪ OC Apollo
seated l. (a).

(a) O. (New College). 23.5 mm., 7.17 g.

191. B. Head r., bare.

ab. →ΚΟΛΟΦΩ bel. →ΝΙΩΝ Ram walking r.

(a) K. (KP. 1261). 19 mm. (b) ? V. (30647). 18 mm.

[obv. leg. obscure].

192. C. Head r., bare.

ab. →ΚΟΛΟΦΩ bel. →ΝΙΩΝ Ram walking r.

(a) P. 18 mm.

COMMODUS

Obverse Types

A1. (·AV·KAI·M·AVP)·KOMMOΔOC
A2. (·AV·KAI·M·AVP·) KOMMOΔOC·
B. (AVKAIK) OMOΔOC

193. A1. Bust r., laur., back view.

(↑·ΕΠΙCΤΡ ↪ A·IOV·ΦAVC) TOV·TO·B
(ex.)→·ΚΟΛΟΦΩΝΙ· Apollo seated l. (d).

ΩΝ

(a) P. 35 mm. [= Mi. S. vi. 101/139].

194. A2. Head r., laur.

(↑ ΚΟΛΟΦΩΝΙΩΝΕΠΙ) CΤΡ· IOV· ΦAVC TOV·
TO·B· Apollo seated l. (a).

(a) O. (New College). 28 mm., 19.55 g.

195. B. Head r., laur.

ab. →ΚΟΛΟΦΩ bel. →ΝΙΩΝ Ram walking r.

(a) B. 17 mm. (b) P. 16 mm. [= Mi. S. vi. 101/136]. (c) P. (Wadd. 1502). 16 mm. (d) V.

(33902) [= E. F. Weber sale 2773] ↙, 16 mm.,
3.30 g.

JULIA DOMNA

Obverse Types

A. (ΙΟΥΛΙΑ) ΔΟΜΝΑ CEB

196. A. Bust r., draped.

(ΕΠΙΣΤΡΤΙΒΚΛ) ΜΥΡΩΝΟΤΟΒ

(i.f.) → ΚΟΛ ΟΦ Athene standing l. (a).

ΩΝΙ ΩΝ

(a) B. 28 mm. (b) L. (BMC. 42/46). 30 mm.

CARACALLA

Obverse Types

A. ΩΑΥΤΚΜΑΥΡΑΝΤΩΝΕΙΝΟCCΕΒ

B. (ΑΥΤΚΜΑΥΡ) ΑΝΤΩΝΕΙΝΟC

C. (ΑΥΤ·Κ·Μ·ΑΥ·ΑΝ) ΤΩΝΕΙΝΟC

D. (ΑΥΚΜΑΥΑ) ΝΤΩΝΕΙΝΟC

E. (ΑΥΤ·Μ·ΑΥΡ·ΑΝΤ) ΩΝΕΙΝΟC

F. (ΜΑΥΡΑΝ) ΤΩΝΕΙΝΟC

197. A. Bust r., laur., slight beard, back view: star
below bust in front.

(ΕΠΙΣΤΡ. ΑΥΡΑΠΟΛΛΟ) ΔΟΤΟΝ † Β

(ex.) → ΚΟΛΟΦΩΝΙ Apollo seated l. (d).

·ΩΝ·

(a) B. 35 mm. (b) P. 35 mm. [= Mi. iii. 78/124].

[Both same dies.]

198. B. Head r., laur.

(ΕΠΙΣΤΡΤΙ ΑΝΤΩΝΑΜΜΙ) ΑΝΟΝ † Β

(ex.) → ΚΟΛΟΦΩΝΙ Apollo seated l. (d).

·ΩΝ·

(a) L. (BMC. 42/47). 33 mm.

199. C. Head r., laur.

(⤴ ΚΟΛΟ) ΦΩΝΙΩΝ Apollo seated l. (b).

(a) P. 23 mm. [= Mi. S. vi. 103/148]. (b) E. T. Newell. 23 mm.

[Same obv. die as 204 (a).]

200. D. Youthful bust r., laur., back view.

(⤴ ΚΟΛΟ) Φ ΩΝΙΩ (ex.) → N Apollo seated l. (b).

(a) B. 23 mm. (b) K. (KP. 1184). 22 mm.

[Both same dies.]

201. F. Bust r., laur., back view.

(⤴ ΚΟΛΟ) Φ ΩΝΙ (ex.) → ΩΝ Apollo seated l. (b).

(a) B. 22 mm. (b) K. 22 mm. (c) P. 23 mm.
[= Mi. S. vi. 103/144].

[All three same dies, and same obv. as 205 (a).]

202. F. (?) Bust r., laur.

(⤴ ΕΠΙΣΤΡΤΙΒ ↪ ΚΛΑΥ) ΜΥΡΩΝΟΤΟΒ

(ex.) → ΚΟΛΟΦΩΝΙ Asklepios and Hygieia.

ΩΝ

(a) Cahn sale lxxi, 813. 35 mm.

203. E. Head r., laur.

(⤴ ΚΟΛΟΦ) ΩΝΙΩΝ Sarapis seated l.

(a) L. (BMC. 43/48). ↙, 22 mm.

204. C. Head r., laur.

(⤴ ΚΟΛΟΦΩ) ΝΙΩΝ Tyche standing l.

(a) O. 22 mm., 5.03 g.

[Same obv. die as 199 (a).]

205. F. Bust r., laur., back view.

(⤴ ΚΟΛΟΦ) ΩΝΙΩΝ Tyche standing l.

(a) K. (KP. 1051). 23 mm.

[Same obv. die as 201 (a) (b) (c).]

GETA

Obverse Types

A. (ΠΟCE) ΓΕΤΑΚ

206. A. Bust r., bareheaded, back view.

⊙ ΚΟΛΟ Φ (ex.) ← ΩΝΙΩΝ Ram walking r.

(a) B. 18.5 mm. (b) L. (N.C. 1904. 302/21). 18 mm.

[Both same dies.]

MACRINUS

Obverse Types

A. (ΑΥΤΚΜΟΠCE) ΜΑΚΡΕΙΝΟC (?)

207. A. Bust r., laur., wearing cloak and cuirass.

(ΕΠΙCΤΡΤΙΒΚΛΑ) ΡΤΕΜΙΔΩΡΟV (ins.)

(ΚΟΛΟΦ) ΩΝΙΩΝ Tyche standing l.

(a) B. 30 mm.

DIADUMENIANUS

Obverse Types

A. (ΔΙΑΔΟV) ΜΕΝΙΑΝΟC

208. A. Bust r., bareheaded, back view.

(ΚΟΛΟ) ΦΩ (ex.) → ΝΙΩΝ River-god reclining l.

(a) B. 17 mm.

209. A. Bust r., bareheaded, back view.

↪ ΚΟΛΟΦΩ Ν (ex.) → ΙΩΝ Ram walking r.

(a) M. 17 mm. [= Mi. iii. 79/132].

ELAGABALUS

Obverse Types

A. (ΑΝΤΩ) ΝΕΙΝΟCΑV

210. A. Bust r., laur., back view.

↵ΚΟΛΟΦ Ω (ex.) → ΝΙΩΝ Ram walking r.
 (a) B. 18 mm. (b) V. (34469). 18 mm., 2.37 g.

JULIA MAESA

Obverse Types

A. (↑ΙΟΥΛΙΑ·) ΜΑΙCΑCΕΒ

211. A. Bust r., draped.

(↑ΚΟΛΟΦ) Ω ΝΙΩΝ Sarapis seated l.
 (a) B. 22 m.

SEVERUS ALEXANDER

Obverse Types

A. (↑ΜΑΥΡΑΛ) ΞΕΑΝΔΡΟC

B. (↵ΑΥΤΚΜΑΥΡCΕΥΑΛΞΕΑΝΔΡΟC

212. A. Bust r., laur., back view.

(↑ΚΟΛΟ) ΦΩΝΙΩΝ Apollo seated l. (a).
 (a) Gotha. 18 mm.

213. B. Bust r., laur., back view.

(↑ΚΟΛΟΦ) Ω ΝΙΩΝ Tyche standing l.
 (a) O. 22 mm., 5.40 g.

MAXIMINUS

Obverse Types

A. (·ΑΥΤ·Κ·Γ·ΙΟVΗ·) ·ΜΑΞΙΜΕΙΝΟC·

B1. (↑ΓΙΟVΗ) ΜΑΞΙΜΕΙΝΟC

B2. (↑Γ·Ι·ΟVΗ·) ΜΑΞΙΜΕΙΝΟC

214. A. Bust r., laur., back view.

(↑ΕϠ·CϘ·Γ·Ι ↵ΟVΗ·ΜΑ) ΞΙΜΟVΚΑΙ
 (ex.) → ΚΟΛΟΦΩΝ Apollo seated l. (d).
 ΙΩΝ

(a) M. 35 mm. [= Mi. iii. 80/153].

215A. B1. Bust r., laur., back view.

(↑ ΚΟΛΟΦ) ΩΝΙΩΝ Sarapis seated l.

(a) C. (Leake, Suppl. p. 40). 21 mm., 4.77 g. (b)

L. (H. Weber 5831). 22 mm., 5.80 g.

[Both same obv. die.]

215B. B2. Bust r., laur., back view.

(↑ ΚΟΛΟΦ) Ω ΝΙΩΝ Sarapis seated l.

(a) O. 21.5 mm., 4.27 g.

216. B1. Bust r., laur., back view.

(↑ ΚΟΛΟΦ) Ω ΝΙΩΝ Tyche standing l.

(a) V. (31861). 22 mm., 5.26 g.

MAXIMUS

Obverse Types

A. (↑ ·Γ·ΙΟVH·MA) ·ΞΙΜΟCΚΑΙC·

B. (↑ ΓΙΟV) ΜΑΞΙΜΟC

217. A. Bust r., laur., back view.

(↑ ΚΟΛΟΦ) Ω ΝΙΩΝ Homer stated r.: roll inscribed OMH

P₂

(a) Aberdeen. (Davis 242). 30 mm., 11.49 g. (b)

B. 30 mm. (c) C. Leake, As. Gr. p. 45). 29 mm.,

9.67 g. (d) M. (29) 30 mm.

[(a) and (b) same dies.]

217A. A. Bust r., laur., back view.

(↑ ΚΟΛΟΦ) ΩΝΙΩΝ Apollo advancing l.

(a) E. T. Newell. 30 mm., 10.92 g.

218. B. Bust r., laur., back view.

↪ ΚΟΛΟΦ ΩΝ (ex.) ← ΙΩΝ Ram walking r.

(a) Gotha. (b) O. 16 mm., 1.93 g. (c) V. (35565)

17 mm., 2.85 g.

GORDIANUS III

Obverse Types

- A. (AVTKMANT) ΩΓΟΡΔΙΑΝΟC
 B1. Ω AVT·K·M·ANT· ΓΟΡΔΙΑΝΟC
 B2. (AVTK·M·ANT·) ·ΓΟΡΔΙΑΝΟC
 C. (AVTKMANT) ΓΟΡΔΙΑΝΟC
 D. (AVTKMANΓ) ΟΡΔΙΑΝΟC

219. A. Bust r., laur., wearing cuirass and cloak:
 star below.

(ΕΠΙCΤ ◡ ΠΚΟΛΟΛ) ΟΝΝΕΙΚΟV (ex.) →
 ΚΟΛΟΦΩΝ Apollo seated l. (d).

(a) B. 35 mm.

[Same obv. die as 220 (a). The rev. leg. appears
 to be altered from — ΚΑΛΛΙΝΕΙΚΟV — .]

220. A. Bust r., laur., wearing cuirass and cloak:
 star below.

(ΕΠΙCΤΡΑΥΡ·) ·ΜΑΡΚϚ ΚΟΛΟ (ex.) ← ΦΩΝ
 (ins.) (ΙΩΝ Apollo seated l. (a).

(a) B. 34.5 mm.

[(a) same obv. die as 219 (a).]

221. B1. Bust r., laur., back view

Ω ΕϠCΠΚΑΛΛΙΝΕΙΚΟVΚΟΛΟΦΩ (ex.) ←
 ΝΙΩΝ. Apollo seated l. (a).

(a) K. (KP. 839). 28 mm. (b) L. (BMC. 43/49).
 30 mm. (c) V. (30296). 30 mm.

222. B2. Bust r., laur., back view.

(ΕϠ·CΤΡ·ΑΥΡΜ) ΑΡ ΚΟVΚΟΛ (ex.)
 ← ΟΦΩΝΙΩΝ Apollo seated l. (a).

(a) B. 31 mm. (b) C. (Leake, Suppl. p. 40). 29 mm.,
 8.68 g. (c) G. (Hunter cat. 325/8) 31 mm. (d)

L. (BMC. 43/50). 30 mm. (e) M. (Acc. 34598).

30 mm. (f) V. (17084). 30 mm.

[(a) (b) and (d) same dies.]

223. C. Bust r., laur., back view.

⌈ ΚΟΛΟΦ ⌋ ΩΝΙΩΝ Sarapis seated l

(a) Len. 20.5 mm., 3.75 g.

[(a) same obv. die as 224 (a).]

224. C. Bust r., laur., back view.

⌈ ΚΟΛΟΦΩ ⌋ Ν ΙΩΝ Tyche standing l.

(a) B. 21 mm. (b) V. (27671). 21 mm.

[(a) same obv. die as 223 (a).]

225A. D. Bust r., laur., back view.

⌈ ΚΟΛΟΦ ⌋ Ω ΝΙΩΝ Tyche standing l.

(a) O. 21.5 mm., 4.77 g.

[(a) same obv. die as 225B (a).]

225B. As 225A, but rev. leg. ⌈ ΚΟΛΟ ⌋ Φ ΩΝΙΩΝ

(a) B. 22 mm.

[(a) same obv. die as 225A (a).]

PHILLIPPUS I

Obverse Types

A. ⌈ ΑΥΤ·Κ·Μ·ΙΟΥΛ· ⌋ ·ΦΙΛΙΠΠΟΣ·

B. ⌈ ΑΥΤΚΜΙΟΝ ⌋ ΦΙΛΙΠΠΟΣ

C. ⌈ ΑΥΦΙ ⌋ ΛΙΠΠΟΣ

226. A. Bust r., laur., back view.

⌈ ΕϞ·CϞA·ΑΥΡ·ΛΟΝΚΙΩΝΦΙΛΟCΕΚΟΝΟ

(ex.) ← ΦΩΜΙ (i.f.l.) → ΩΝ Apollo seated l. (a).

(a) B. 35.5 mm. (b) L. 35 mm.

227. A. Bust r., laur., back view.

⌈ ΕϞCϞAΥΡΑΙCΧΡΙΩΝϛΓΚΟΛΟΦΩ (ex.) →

ΝΙΩΝ Apollo seated l. (a).

(a) V. (35785). 35 mm., 15.99 g.

228A. B. Bust r., laur., back view.

(↑ ΚΟΛΟ) ΦΩΝΙΩΝ Apollo seated l. (a).

(a) † B. 21.5 mm. (b) K. 22 mm. (c) L. (BMC. 43/51). 21 mm. (d) O. 22 mm., 3.88 g. (e) V. (30356). 22 mm. (f) V. (30406). 22 mm. (g) H. Weber cat. 5830. 21 mm., 4.27 g.

[(a) and (d) same dies, and same obv. die as 230 (a).]

228B. As 228A, but rev. leg. (↑ ΚΟΛΟΦ) Ω ΝΙΩΝ

(a) O. (Ch. Ch. 1008). 23.5 mm., 4.33 g.

229. B. Bust r., laur., back view.

(↑ ΚΟΛΟΦ) Ω ΝΙΩΝ Sarapis seated l.

(a) Gotha. (b) V. (17085). 21 mm.

230. B. Bust r., laur., back view.

(↑ ΚΟΛΟΦ) Ω ΝΙΩΝ Tyche standing l.

(a) B. 22 mm.

[(a) same obv. die as 228A (a) (d).]

231. C. Bust r., laur., back view.

Ω ΚΟΛΟΦ ΩΝ (ex.) ← ΙΩΝ Ram walking r.

(a) B. 17 mm. (b) Gotha. (c) M. 17 mm. (d) O. 17 mm., 2.28 g.

[(a) and (d) same dies; same rev. die as 245 (a) (b).]

OTACILIA SEVERA

Obverse Types

A. (↑ ·Μ·ΩΤΑ·CΕVΗ) ΡΑ·CΕΒΑC

B. (↑ ·Μ·ΩΤΑΚ·) ·ΛΕΒΗΡΑ·

232. A. Bust r., draped, with stephane.

Ω ΕϞCTP·ΑVP·ΛΟVΚΙΩΝ·ΚΟΛΟΦΩ (ex.) ←

† Due to the fact that 228B was added after the plates were printed, 228A.a appears on the plates as 228a.

NIQN Apollo seated l. (a).

(a) B. 29 mm.

233. B. Bust r., draped, with stephane.

Ⲛⲉⲛⲥⲣⲁⲩⲭⲣⲓⲛⲟⲩⲕⲟⲗⲟⲫⲛ (ex.) ←
IQN Apollo seated l. (a).

(a) B. 29 mm.

[(a) same obv. die as 234 (a) (b), 235 (a) (b) (c),
236 (a), 237 (a), 238 (a) (b) (c), 240 (b).]

234. B. Bust r., draped, with stephane.

Ⲛⲉⲡⲓⲕⲥⲁⲩⲣⲏⲕⲁⲡⲉⲧⲟⲗⲉⲓⲛⲟⲩⲕⲟⲗⲟ (ex.)
←ⲫⲟⲩ (ins.) (Ⲛⲓⲟⲩ) N Apollo seated l. (a).

(a) B. 31 mm. [obv. cmk. B]. (b) K. (KP. 1051)
31 mm.

[(a) and (b) same dies, and same obv. die as 233
(a), 235 (a) (b) (c), 236 (a), 237 (a), 238 (a) (b)
(c), 240 (b).]

235. B. Bust r., draped, with stephane.

(Ⲛⲉⲛⲥⲣⲁⲩⲭⲣⲓⲛⲟⲩⲕⲟⲗⲟⲫⲛ) KIQNΦΙΛΟCΕΒ
(i.f.) → KO ΛΟ Artemis standing to front.

Φ Ω

NI QN

(a) B. 30 mm. (b) L. (BMC. 43/53) 31 mm. (c)
O. 29 mm., 9.65 g. (d) V. (32317) 30 mm., 10.93 g.

[(a) (b) and (c) same dies, and same obv. die as
233 (a), 234 (a) (b), 236 (a), 237 (a) 238 (a) (b)
(c), 240 (b).]

236. B. Bust r., draped, with stephane.

(Ⲛⲉⲛⲥⲣⲁⲩⲭⲣⲓⲛⲟⲩⲕⲟⲗⲟⲫⲛ) Πⲉⲧⲟⲗⲉⲓⲛⲟⲩ
(i.f.) → KOΛ ΟΦΩ Artemis standing to front.

NI QN

(a) O. 29 mm., 9.82 g. [obv. cmk. standing figure].
(b) V. (17087). 29 mm.

[(a) same obv. die as 233 (a), 234 (a) (b), 235 (a) (b) (c), 237 (a), 238 (a) (b) (e), 240 (b).]

237. B. Bust r., draped, with stephane.

(ὈΜΗΡΟCΚΟ) ΛΟΦ ΩΝΙΩ (ex.) ← N Homer seated r.

(a) B. 30 mm.

[(a) same obv. die as 233 (a), 234 (a) (b), 235 (a) (b) (c), 236 (a), 238 (a) (b) (e), 240 (b).]

238. B. Bust r., draped, with stephane.

(ΚΟΛΟΦ) Ω ΝΙΩΝ Homer seated r.

(a) B. 29 mm. (b) C. (McClean 8055) 29 mm., 8.72 g. (c) K. (KP. 1261) 29 mm. (d) L. (BMC. 44/54). 28 mm. (e) P. 27 mm. [= Mi. S. vi. 107/167].

[(a) (b) and (e) same dies, and same obv. die as 233 (a), 234 (a) (b), 235 (a) (b) (c), 236 (a), 237 (a), 240 (b).]

239. B. Bust r., draped, with stephane.

(ΕΠΙCΤΡΑ·ΑΥΡ·ΛΟΥ) ΚΙΩΝ·ΦΙΛΟCΕΒ

(i.f.) ΚΟ ΛΟ Boxer standing r.

ΦΩ ΝΙ

Ω Ν

(a) P. (Wadd. 1503). 29 mm. (b) V. (17086) 30 mm. [= Mi. S. vi. 106/164].

240. B. Bust r., draped, with stephane.

(ΕϠCΠΑΥΡΑΙCΧ) ΠΙΩΝΟCΚΟΛΟΦ (ins.)

(Ω Ν) ΙΩΝ Boxer standing r.

(a) Gotha. (b) L. (1893). 30 mm. [obv. cmk. Δ].
[(b) same obv. die as 233 (a), 234 (a) (b), 235 (a) (b) (c), 236 (a), 237 (a), 238 (a) (b) (e).]

PHILIPPUS II.

*Obverse Types*A. Ω M·IOV·ΦΙΛΙΠΠOC·KAIB. Ω IOVΦΙΛΙΠΠOC·K

C. (ΑΥΤΚΙΟΝ) ΦΙΛΙΠΠOC

241. A. Bust r., bareheaded, wearing cuirass and cloak.

Ω KOΛOΦΩNIΩN Apollo seated l. (a).

(a) V. (33903). 21 mm., 4.34 g. [= E. F. Weber sale 2774.]

242A. A. Bust r., bareheaded, wearing cuirass and cloak.

(ΑΚΟΛΟΦΩ) NIΩN Sarapis seated l.

(a) C. (Leake). 21 mm., 5.03 g. [obv. cmk. A]

(b) E. T. Newell. 21 mm., 5.00 g.

[(a) same obv. die as 243 (a).]

242B. As 242A, but obv. bust laureate.

(a) K. (KP. 773). 22 mm.

243. A. Bust r., bareheaded, wearing cuirass and cloak.

(ΑΚΟΛΟΦΩ) NIΩN Tyche standing l.

(a) B. 22 mm. (b) M. 21.5 mm. (c) V. (35374). 22 mm., 4.55 g.

[(a) same obv. die as 242A (a).]

244. B. Bust r., bareheaded, wearing cuirass and cloak.

Ω KOΛOΦΩNIΩ (ex.) ← N Ram walking r.

(a) B. 17 mm.

245. C. Bust r., laur., back view.

(ΑΚΟΛΟΦΩ) NIΩN (ex.) ← NIΩN Ram walking r.

(a) B. 16 mm. (b) K. (KP. 1185) 17 mm. (c) L.

(BMC. 43/52) 15 mm. (d) V. (33904) 16 mm., 2.37 g. [= E. F. Weber sale 2774].

[(a) and (b) same dies; same rev. die as 231 (a) (d).]

DECIUS

Obverse Types

A. \cap AVTKTPAIANOCΔEKIOC

B. \cap AVTTTPAIANOCΔEKIOC

246. A. Bust r., laur., back view.

(\uparrow ΕΠΙΠΟΙΙΑΤ \downarrow) ΤΙΚΟΝΚΟΛΟΦ (ex.) →
ΩΝΙΩΝ Apollo seated l. (a).

(a) M. 29 mm. [? = Mi. iii. 80/136].

247. A. Bust r., laur., back view.

(\uparrow ΕΠΙΑΝΡΑΛΕΞΑΝ \downarrow) ΔΡΟΝΚΟΛΟΦΩ (ins.)
(\uparrow ΝΙ \downarrow) ΩΝ Boxer standing r.

(a) B. 30 mm. [= Imhoof, Kl. M. 72/17]. (b) V. (35305). 29 mm., 9.17 g.

248. B. Bust r., laur., back view.

(\uparrow ΚΟΛΟΦ \downarrow) Ω ΝΙΩΝ Tyche standing l.

(a) K. (KP. 1134). 22 mm. (b) L. (BMC. 44/55). 22 mm. (c) Len. 21.5 mm., 4.78 g. (d) Len. 21 mm., 4.70 g. (e) M. (Acc. 34608). 21 mm.

[(c) and (d) same dies.]

ETRUSCILLA

Obverse Types

A. \cap ΕΡΕΝΕΤΡΟΝΚΙΑΛΛΑCΕΒ

249. A. Bust r., draped, with stephane.

(\uparrow ΕϠCϜΑΦΛΑΓΑΘΟ \downarrow) ΚΛΕΟΝΚΟΛΟΦ (ex.)
←ΩΝΙΩΝ Apollo seated l. (a).

(a) B. 28 mm. (b) L. (BMC. 44/56) 29 mm.

[(a) and (b) same obv. die as 250 (a) and 251 (a);
same rev. as 252 (a) (b) (c).]

250. A. Bust r., draped, with stephane.

(⤴ ΕΡΕΤΡΑΦΛΑΓΑΘΟ ⤵) ΚΛΕΟΝΣΚΟΛΟΦΩ (ex.)

← ΝΙΩΝ Homer seated r.

(a) K. (KP. 1051) 28 mm.

[(a) same obv. die as 249 (a) and (b) and 251 (a).]

251. A. Bust r., draped, with stephane.

(⤴ ΕΡΕΤΡΑΦΛΑΓΑΘΟ ⤵) ΚΛΕΟΝΣΚΟΛΟΦΩ

(ins.) (⤴ ΝΙ ⤵) ΩΝ Boxer standing r.

(a) L. (BMC. 44/57) 29 mm.

[(a) same obv. die as 249 (a) and (b) and 250 (a).]

ETRUSCUS

Obverse Types

A. ΩΚΥ·ΕΡ·ΕΤΡ·ΜΕ· ΔΕΚΙΟC·ΚΑΙ

B. ΩΕΡΕΤΡΟΝΔΕΚΙΟCΚΑΙ

252. A. Bust r., bareheaded, wearing cuirass and cloak.

(⤴ ΕΡΕΤΡΑΦΛΑΓΑΘΟ ⤵) ΚΛΕΟΝΣΚΟΛΟΦΩ (ex.)

← ΩΝΙΩΝ Apollo seated l. (a).

(a) B. 30 mm. (b) L. (BMC. 44/58) 31 mm. (c)

P. (Wadd. 1504) 29 mm.

[(a) (b) and (c) same dies: same rev. die as 249 (a).]

253. A. Bust r., bareheaded, wearing cuirass and cloak.

(⤴ ΕΡΕΤΡΑΦΛΑΓΑΘΟ ⤵) ΚΛΕΟΝΣΚΟΛΟΦΩ

(ins.) (⤴ ΝΙ ⤵) ΩΝ Boxer standing r.

(a) M. 29 mm. [= Mi. iii. 82/146].

254. B. Bust r., bareheaded, wearing cuirass and cloak.

(⤴ ΚΟΛΟΦ ⤵) Ω ΝΙΩΝ Tyche standing l.

(a) B. 22 mm. (b) M. 22 mm. (c) M. 20.5 mm.
(d) V. (33905) 19.5 mm., 4.13 g. [= E. F. Weber sale 2775].

GALLUS

Obverse Types

A. (⤴ ΑΥΚ·Γ·ΟΒΙΒ·ΤΡΕΒΩΝΙ ⤵) ΑΝΟΙΓΑΛΛΟΕ

B. Ω ΑΥΚΤΡΕΒΩΝΙΑΝΟΓΓΑΛΛΟC

255. A. Bust r., laur., back view.

(⤴ ΕΠΙΕΤΡΚΑΛΛΙΕ ΤΟ ⤵) VΙΕΡΕΩΙΩΝΩΝ
(bel.) ⤴ ΚΟΛΟΦΩΝΙΩ Temple-precinct (a):
across field, below temple, → ΤΟΚΟΙΝΟΝΙΩ

NΩ N

(a) B. 35 mm. (b) B. (36 mm.). (c) C. (McClean 8057) 33.5 mm., 16.85 g. [= E. F. Weber sale 2776]. (d) G. (Hunter cat. 325/9). 35 mm. (e) V. (17088). 34 mm.

[(a) (b) and (c) same dies.]

256. B. Bust r., laur., back view.

(⤴ ΚΟΛΟΦ ⤵) Ω ΝΙΩΝ Apollo seated l. (a).

(a) B. 22 mm. (b) C. (McClean 8056) 21.5 mm., 5.57 g. [= E. F. Weber sale 2777]. (c) O. (New College). 21 mm., 4.39 g.

[(a) (b) and (c) same dies: same obv. die as 258 (a).]

257. B. Bust r., laur., back view.

(⤴ ΚΟΛΟΦ ⤵) Ω ΝΙΩΝ Sarapis seated l.

(a) V. (34186). 21 mm., 3.86 g.

258. B. Bust r., laur., back view.

(⤴ ΚΟΛΟΦΩ ⤵) Ν ΙΩΝ Tyche standing l.

(a) O. 21 mm., 4.40 g. (b) P. (Wadd. 1505) 20 mm.

(c) V. (30550) 21 mm.

[(a) same obv. die as 256 (a) (b) (c).]

VOLUSIANUS

Obverse Types

A. Ω AVT·K·Γ·OVIB· OVOΛOVCIANOC·

259. Bust r., laur., back view.

Ω ΕΠΙCTP·KAKAAICTΘKOΛO (ins.) (\uparrow ΦΩNI
 \downarrow ΩN Apollo seated l. (a).

(a) B. 28 mm. (b) C. (McClean 8058) 28.5 mm.,
 10.17 g. [= E. F. Weber sale 2777]. (c) G.
 (Hunter cat. 326/10). 32 mm. (d) P. (Wadd. 1506)
 28 mm. (e) V. (17089) 30 mm. [= Mi. S. vi
 109/176].

[(a) and (b) same dies: same obv. die as 260 (a),
 262 (a) (b).]

260. A. Bust r., laur., back view.

(\uparrow ΕΠΙCTP·KΛ·K \downarrow AAAICTΘKOΛO (i.f.) →
 ΦΩ NI (ex.) → ΩN· Artemis standing to front.

(a) P. (Wadd. 1507). 30 mm.

[(a) same obv. die as 259 (a) (b), 262 (a) (b).]

261. A. Bust r., laur., back view.

(\uparrow ΕΠΙCTP·KΛ \downarrow KAAICTΘKOΛ (ex.) O
 (ins.) (\uparrow ΦΩNI \downarrow Ω N Athene standing r.

(a) V. (31860) 30 mm., 10.38 g. [obv. cmk. ς].

262. A. Bust r., laur., back view.

(\uparrow ΕΠΙCTPAVPAΘ \downarrow HNAI ΘKOΛ (ex.) ·O·
 (ins.) (\uparrow ΦΩN \downarrow IQN Homer seated r.

(a) B. 29 mm. (b) L. (BMC. 45/59). 30 mm.

[(a) and (b) same dies: same obv. die as 259 (a)
 (b), 260 (a).]

VALERIANUS

*Obverse Types*A. Γ ΑΥΤΚΠΟΛΙΚΙΝΟΝΑΛΕΡΙΑΝΟCB. Γ ΑΥΤΚΠΟΛΙΚΙΟΝΑΛΕΡΙΑΝΟC

263. A. Bust r., laur., wearing cuirass and cloak.

(\uparrow ΕΠΙCΤΡΠΑΙΔΚΑΛ (\downarrow) ΛΙΝΕΙΚΘ ΚΟΛΟΦΩ-
 ΝΙΩΝ Temple-precinct (b): across field, below
 temple, →ΤΟΚΟΙΝΟΝΤΩΝΙ

ΩΝ ΩΝ

(a) B. 33 mm. (b) B. 33 mm. (c) L. (BMC.
 45/60) 32 mm.

[(a) (b) and (c) same dies.]

264A. B. Bust r., laur., wearing cuirass and cloak.

Γ ΕΠΙ·Φ·Π·ΑΙΚΑΛΛΙΝΕΙΚΟΝΚΟΛΟΦΩ (ex.)
 ←ΝΙΩΝ Apollo seated l. (a).

(a) B. 27 mm. (b) L. (BMC. 45/61). 26 mm. [obv.
 cmk. B]. (c) O. 27.5 mm., 8.27 g.

[(a) and (c) same dies: same obv. die as 264B (b)
 and 265 (a) (c).]

264B. As 264A, but rev. leg. (\uparrow ΕΠΙCΤΡΠΑΙΚΑΛΛ
 \downarrow) ΙΝΕΙΚΘ ΚΟΛΟΦΩ (ex.) ←ΝΙΩΝ

(a) L. (BMC. 45/62) 27 mm. [obv. cmk. B]. (b) P.
 26 mm. [= Mi. S. vi. 109/177].

[(b) same obv. die as 264A (a) (c) and 265 (a)
 (c).]

265. B. Bust r., laur., wearing cuirass and cloak.

(\uparrow ΕΠΙCΤΡΠΟΑΙCΕ (\downarrow) ΒΗ ΡΕΙΝΘΚΟ (ex.) ←
 ΛΟΦΩΝΙΩΝ Homer seated r.

(a) B. 28 mm. (b) L. (BMC. 46/63) 27 mm. [obv.
 cmk. B]. (c) Len. 26 mm., 7.61 g.

[(a) and (c) same dies: same obv. die as 264A (a)
 (c) and 264B (b); same rev. as 271 (b) (d).]

GALLIENUS

Obverse Types

- A. ζ ΑΥΤ·Κ·ΠΟ·ΛΙΚ· ΓΑΛΛΙΗΝΟC
 B. ζ ΑΥΤΚΠΟΛΙΓΑΛΛΙΗΝΟC
 C. (ζ ΑΥΓΑΛ η) ΛΙΗΝΟC

266. A. Bust r., laur., back view.

ζ Ε ρ ΑΙΚΑΛΛΙΝΕΙΚ δ ΚΟΛΟΦ (ex.) \leftarrow
 ΩΝΙΩΝ Apollo seated l. (a)

(a) K. (KP. 933) 26 mm. [obv. cmk. B]. (b) P.
 (Wadd. 1508) 25 mm. (c) V (17090). 27 mm.
 [= Mi. S. vi. 109/178].

267. A. Bust r., laur., back view.

ζ Ε ρ ΑΙCΕΒΗΡΕΙΝΟΝΚΟΛΟΦΩΝ (ex.) \leftarrow
 ΙΩΝ Apollo seated l. (a).

(a) L. (1894). 26 mm. [obv. cmk. B].
 [(a) same obv. die as 268 (a), 269 (b), 270 (a),
 and 271 (b) (c) and (d).]

268. A. Bust r., laur., back view.

(ζ Ε ρ C ρ ΠΟΑΙΚΑΛΛΙ η) ΝΕΙΚΟΝΚΟΛΟΦΩΝΙ
 (ex.) \leftarrow ΩΝ Athene standing l. (b).

(a) B. 25.5 mm. (b) P. (Wadd. 1509). 25 mm.
 [(a) same obv. die as 267 (a), 269 (b), 270 (a),
 and 271 (b) (c) and (d).]

269. A. Bust r., laur., back view.

(ζ Ε ρ C ρ ΑΙCΕΒΗΡΕ η) ΙΝ δ ΚΟΛΟΦΩΝΙΩ
 (ex.) \leftarrow Ν Athene standing l. (b).

(a) K. (KP. 1051) 25 mm. [obv. cmk. B]. (b) L.
 (BMC. 46/64) 26 mm. [obv. cmk. B].
 [(b) same obv. die as 267 (a), 268 (a), 270 (a),
 and 271 (b) (c) and (d).]

270. A. Bust r., laur., back view.

(⤴ ΕΡΠΠΑΙΚΑΛΛΙ ⤵) ΝΕΙΚΘ ΚΟΛΟΦΩ (ex.)

← ΝΙΩΝ Sarapis seated l.

(a) P. (Wadd. 1510) 25 mm.

[(a) same obv. die as 267 (a), 268 (a), 269 (b), and 271 (b) (c) and (d).]

271. A. Bust r., laur., back view.

(⤴ ΕΡΣΤΡΠΟΑΙΣΕ ⤵) ΒΗ ΡΕΙΝΥΚΟ (ex.) ←

ΛΟΦΩΝΙΩΝ Homer seated r.

(a) G. (Hunter cat. 326/11) 27.5 mm. (b) Gotha. 28 mm. (c) L. (1927) 27 mm. (d) O. 26.5 mm., 8.03 g.

[(b) (c) and (d) same dies: same obv. die as 267 (a), 268 (a), 269 (b), and 270 (a); same rev. as 265 (a) (c).]

272. B. Bust r., laur., back view.

(⤴ ΚΟΛΟ ⤵) Φ ΩΝΙΩΝ Tyche standing l.

(a) B. 20 mm. (b) C. (McClean 8059). 19.5 mm., 4.81 g. [= E. F. Weber sale 2777]. (c) Gotha. (d) K. (KP. 893) 19 mm.

[(a) and (b) same dies.]

273. C. Bust r., laur., back view.

↪ ΚΟΛΟΦ ΩΝ (ex.) ← ΙΩΝ Ram walking r.

(a) O. 17 mm., 3.02 g.

SALONINA

Obverse Types

A. (⤴ ΣΑΛΩΝΧΡΥΣ ⤵) ΟΓΟΝΗΣΕΒ

274. A. Bust r., draped, with stephane, crescent behind shoulders.

(⤴ ΕΠΠΠΑΙΚΑΛΛΙ ⤵) ΝΕΙΚΟΝ ΚΟΛΟΦ (ex.) ←

ΩΝΙΩΝ Apollo seated l. (a).

(a) B. 27 mm. [= Imhoof, Gr. M. 272].

VALERIANUS JR.

Obverse Types

A. ΩΚΟΡΝΟΒΑΛΕΡΙΑΝΟΚΑΙC

275A. A. Bust r., laur., back view.

(↑ ΚΟΛΟΦ) Ω ΝΙΩΝ Apollo seated l. (a).

(a) B. 20 mm. (b) G. (Hunter cat. 326/12) 21 mm.

(c) K. (KP. 1046) 19 mm. (d) M. (Acc. 32092)

20 mm. (e) V. (29874) 20 mm.

275B. As 275A, but rev. leg. (↑ ΚΟΛΟ) ΦΩ ΝΙΩΝ

(a) K. (KP. 1202) 19 mm. (b) V. (30747) 20 mm.

PSEUDO-AUTONOMOUS

276. (↑ ΙΕΡΑCV) ΝΚΑΗΤΟC Bust r.

(↑ ΚΟΛΟΦ) ΩΝΙΩΝ Sarapis seated l.

(a) B. 23 mm. [= Imhoof, Kl. M. 72/16]. (b) O.

(Ch. Ch. 1007). 22 mm., 5.18 g. (c) V. (32963).

22.5 mm., 3.68 g.

The coinage of Kolophon in the Imperial period presents no difficulties in chronology: there is only a solitary specimen of the "pseudo-autonomous" class, and this can be assigned with probability to the reign of Gordian III or Philip I. Hardly anything was issued in the first century of the Empire: a considerable output appeared under Trajan, a motive for which it is not easy to suggest, as Trajan is not known to have exhibited any particular interest in this part of Ionia. Hadrian's reign is a blank in the series: there was a slight activity under Pius and

Commodus, and much more under Caracalla: then it slackened, though most reigns are represented in the list, till the time of Gordian III. After that the mint was fairly continuously at work until the general cessation of coinage in Ionia under Gallienus.

Though there are many different reverse-types in this latest period, the number of coins struck from each type would not appear to have been large, as one obverse die was used with several reverses: for instance, all the coins of Severa of obverse-type B which it has been possible to compare from illustrations or casts were struck with the same obverse-die, though there are eight different reverses; and probably all other specimens would prove to be from the same. A reverse-die might also be used for more than one member of the Imperial house: for instance, 231 of Philip I and 245 of Philip II have the same reverse-die; so have 249 of Etruscilla and 252 of Etruscus, and 265 of Valerian and 271 of Gallienus. These facts suggest that the issue of coins was governed more by a desire for display than by any economic demand.

APPENDIX

I. IMPERIAL REVERSE-TYPES

APOLLO standing l., himation over l. shoulder and round legs, r. hand hanging down, l. resting on sceptre.

APOLLO seated r. on high-backed throne, wearing long robe, holding in r. laurel branch, lyre (held in l. ?) on knee.

APOLLO seated l., (a) on low throne, naked to waist, holding in r. laurel-branch, resting l. on lyre beside him on seat.

APOLLO seated (b) as (a), but to l. tripod.

APOLLO seated (c) as (b), but holding on r. cult-statue of Artemis to front.

APOLLO seated (d) as (a), with, on l., Artemis standing l., head r., wearing long chiton with diplois and resting r. on sceptre; on r., Leto (?) standing l., wearing long chiton and peplos, holding sceptre in l.

ARTEMIS standing to front, in form of cult-statue, wearing high polos and veil, body draped, lower arms outstretched at right angles to body, with fillet pendent from each arm ending in a knob.

ASKLEPIOS standing to front, head l., wearing himation, resting r. hand on serpent-staff, l. wrapped in himation, and Hygieia standing to front, head r., wearing long chiton and peplos, carrying serpent in both arms, facing: between them,

small figure of Telesphoros to front, hooded and cloaked.

ATHENE standing r., wearing crested helmet, aegis, long chiton, and peplos, resting r. hand on spear, shield in l.

ATHENE standing l. (a) wearing crested helmet, aegis, long chiton, and peplos, holding phiale in r. hand, spear upright in l.; shield on l. arm.

ATHENE standing (b) as (a), but no peplos, and l. hand resting on shield on ground, by which spear.

BOXER stepping r., naked, arms hanging down, fists clenched.

HOMER seated r. on low throne, naked to waist, holding out in l. hand half-open roll.

RAM walking r.

RIVER-GOD reclining l., drapery over legs, holding in r. hand reed, in l. cornucopiae: under l. elbow urn.

SARAPIS seated l. on high-backed throne, wearing modius and himation, r. shoulder bare, r. hand outstretched over Kerberos seated at his feet, l. resting on sceptre.

TEMPLE-PRECINCT (a) containing tetrastyle shrine with disk in pediment: within it, statue of Apollo seated l. holding laurel in r. hand, resting l. on lyre: in front, humped bull walking l. towards altar, and around in semicircle thirteen figures, each with r. hand raised holding wreath.

TEMPLE-PRECINCT (b) as (a), but bull walking r.

TYCHE standing l., wearing kalathos, long chiton, and peplos, resting r. hand on rudder, holding cornucopiae in l.

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KOLOPHON AND ITS COINAGE



2a.



3b.



4a.



5a.



6a.



7c.



7g.



9a.



10a.



11a.

PERIOD I

PLATE I



13a.



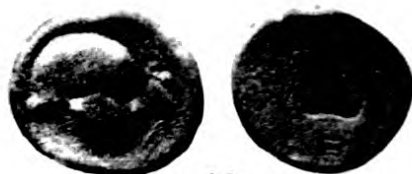
13c.



14c.



14a.



15a.



17a.



18f.



20a.



21b.



22a.



23a.

PERIOD II

KOLOPHON AND ITS COINAGE



24c.



25a.



26A.a.



27A.a.



27B.a.



28A.b.



31a.



28B.a.



32a.



34b.



35a.



36a.



37a.

PERIOD II

PLATE II



39b.



40B.a.



40C.a.



41a.



43a.



44a.



46b.



49A.d.



49B.a.



PERIOD II

KOLOPHON AND ITS COINAGE



51a.



51b.



52a.



52b.



53a.



54a.



55a.



55c.



56a.



57a.



PERIOD III

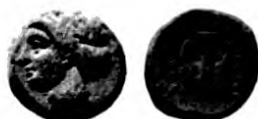
PLATE III



58a.



60a.



62a.



63a.



65a.



65c.



66A.a..



66A.b.



66B.a.

PERIOD III

KOLOPHON AND ITS COINAGE



67a.



67d.



68a.



70a.



71b.



72a.



73a.

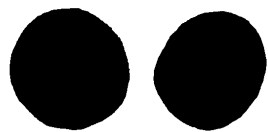


74a.



PERIOD III

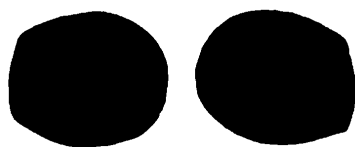
PLATE IV



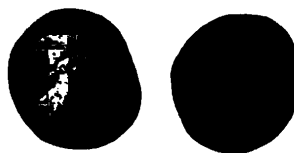
75b.



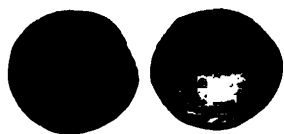
77a.



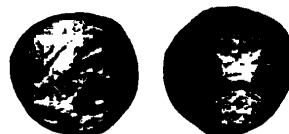
78A.a.



78B.b.



79a.



80a.



81a.



82a.



83b.



84a.

PERIOD III

KOLOPHON AND ITS COINAGE



85a.



86b.



86f.



87A.b.



89a.



90a.



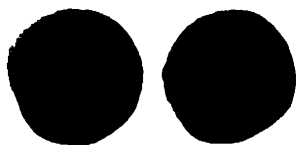
91a.

PERIOD IV

PLATE V



92A.a.



94a.



95a.



96a.



97a.



98a.



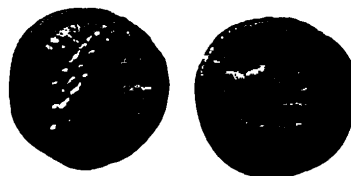
100a.

PERIOD IV

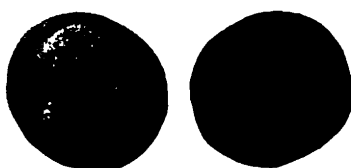
KOLOPHON AND ITS COINAGE



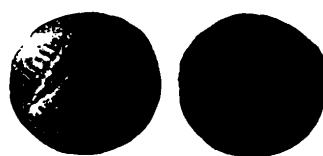
101b.



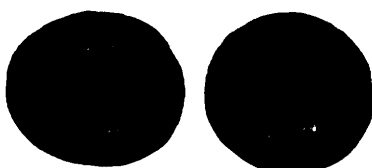
101c.



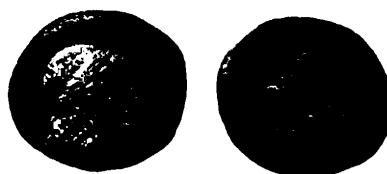
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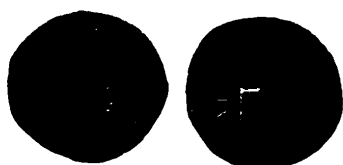
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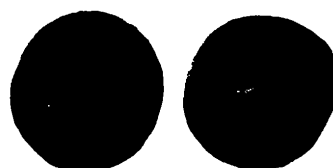
104c.



105a.



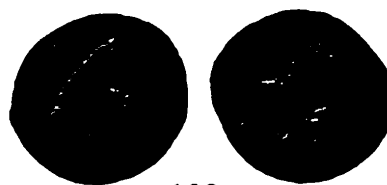
106a.



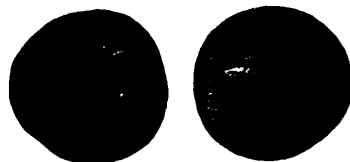
107a.



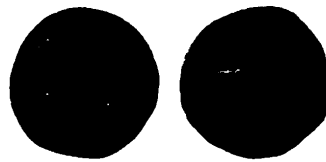
108a.



109a.



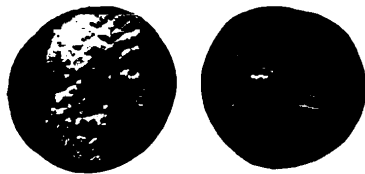
110b.



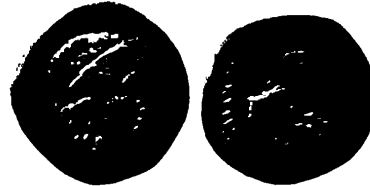
111a.

PERIOD V

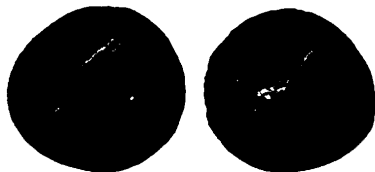
PLATE VI



112c.



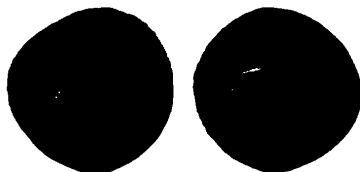
113a.



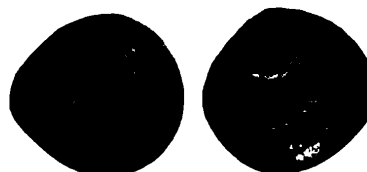
114a.



114d.



115a.



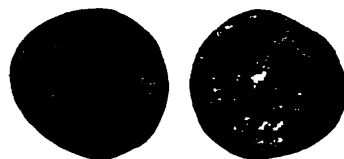
115g.



116b.



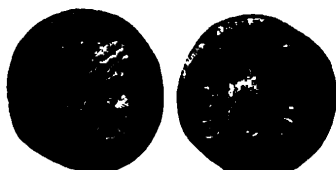
117a.



118a.



120b.



121e.



121g.

PERIOD V

KOLOPHON AND ITS COINAGE



122a.



123a.



125a.



126a.



127a.



128a.



129b



130a.



131c.



PERIOD V

PLATE VII



132g.



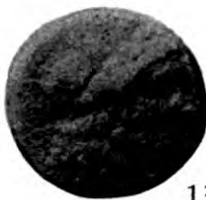
133a.



134a.



135b.



136f.



137a.



138c.



139a.



140a.



141a.



PERIOD V

KOLOPHON AND ITS COINAGE



142a.



143a.

144a.

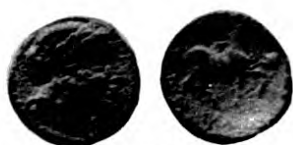


145b.

146a.



147a.



149b.



151a.

PERIOD V (to 146)

PLATE VIII



153a.



154a.



155a.



156a.



157a.



158c.



159a.



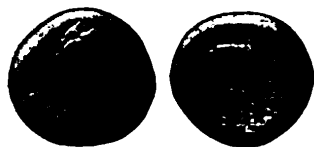
160b.



160d.



161a.



162a.



163a.

PERIOD VI

KOLOPHON AND ITS COINAGE



164a.



165b.



166b.



166g.

PERIOD VII

PLATE IX



167a.



168c.



169a.



170a.



171a.

PERIOD VII

KOLOPHON AND ITS COINAGE



172b.



173a.



175b.



175c.

PERIOD VII

PLATE X



176a.



176b.



177a.



178m.



179c.

PERIOD VII

KOLOPHON AND ITS COINAGE



180a.



182a.



183b.



184C.a.



185B.a.



PLATE XI



181a.



184A.a.



185A.b.



186a.

KOLOPHON AND ITS COINAGE



187A.a.



192a.



194a.



196a.

PLATE XII



188a.



189b.



193a.



195a.



197a.



KOLOPHON AND ITS COINAGE



198a.



201c.



204a.



208a.

210a.

PLATE XIII



199a.



200a.



203a.



206a.



211a.



212a.



KOLOPHON AND ITS COINAGE



214a.



217a.



219a.

PLATE XIV



215A.a.



218b.



220a.



221b.



KOLOPHON AND ITS COINAGE



222d.



225A.a.

225B.a.



228a.

230a.

PLATE XV



223a.



224a.



226a.



231a.

KOLOPHON AND ITS COINAGE



232a.



235a.



237a.



238c.



242B.a.



PLATE XVI



233a.



234b.



236a.



242A.a.



243a.



KOLOPHON AND ITS COINAGE



244a.



245b.



247a.



249a.



250a.



252c.

PLATE XVII



246a.



248d.



251a.



254a.

KOLOPHON AND ITS COINAGE



255b.



258a.



259a.



262a.



264A.a.

PLATE XVIII



256a.



260a.



264B.b.



265a.

KOLOPHON AND ITS COINAGE



263a.



270a.

269b.



273a.



275A.a.

PLATE XIX



267a.



268a.



271c.



272a.



274a.



276a.



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